



Land Mobile Radio Public Safety Spectrum Utilization Planning and Coordination Program

Department of Administration

State Information Services Technology Division

Public Safety Communications Bureau (PSCB)

Land Mobile Radio Public Safety Spectrum Utilization Planning and Coordination Program

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Executive Summary

The radio frequency spectrum in Montana is a statewide resource, much like water, land, natural gas and minerals. Because there is a finite amount of spectrum and a growing demand for it, effectively managing available spectrum is an important priority for the State.

This Land Mobile Radio Public Safety Spectrum Utilization Planning & Coordination Program document begins with an analysis of Montana Code Annotated (MCA) 2-17-541 et seq., which not only establishes the Department of Administration (DOA) as the state agency responsible for coordinating with the Federal Communications Commission (FCC) on public safety Spectrum matters, but also indicates that DOA is to develop and manage a Land Mobile Radio (LMR) Public Safety Spectrum Utilization Plan. The statute also allows DOA to adopt rules for implementing the plan.

This document serves to meet those requirements by defining the processes and procedures for managing administrative, technical, policy, and procedural aspects of spectrum resources in Montana to ensure their efficient and effective use. It provides an overview of important fundamental concepts related to spectrum management, such as spectrum regulation, frequency bands, public safety spectrum and FCC frequency pools. It also provides an explanation of frequency coordination requirements, a list of public safety frequency coordination providers and a comprehensive overview of the FCC license application process. Types of interference are explained, along with details for resolving interference problems. Spectrum licensing and coordination is critical to minimize interference and ensure that licenses are utilized in accordance not only with federal regulations and laws, but also with international agreements.

A complete listing of DOA-managed public safety spectrum is provided. These are managed not only in support of both the Montana Mutual Aid frequency system and the statewide public safety communications system, but also on behalf of a variety of state agencies. The State of Montana holds statewide licenses for mutual aid frequencies, and then provides permission for various public safety and approved public and private entities to use the frequencies via a permitting system. The section continues with descriptions of spectrum managed by other state agencies for both public safety and non-public safety purposes.

A number of goals and objectives for the Land Mobile Radio Public Safety Spectrum Utilization Planning and Coordination Program have been developed to address the spectrum needs of local, state and tribal stakeholders, to effectively manage Montana's spectrum resources, and to comply with the requirements of MCA 2-17-541 et seq. These goals include working with stakeholders to enhance the effectiveness of Montana's spectrum utilization planning efforts; providing spectrum support to local, state and tribal public safety entities; and effectively managing the Montana Mutual Aid frequency system. Annual reviews of all FCC licenses held by DOA for the Montana mutual aid system and on behalf of the statewide public safety communications system will be conducted, along with a review of FCC licenses held by Montana state government agencies. Finally, the Program intends to produce an annual report about Montana's spectrum utilization. Accomplishment of these goals should result in improved spectrum management for the State of Montana.



Land Mobile Radio Public Safety Spectrum Utilization Planning and Coordination Program Department of Administration State Information Services Technology Division Public Safety Communications Bureau (PSCB)

I. Introduction and Purpose

Nearly all public safety personnel in Montana use two-way land mobile radios for communications. From the snowplow operator clearing highways, to a Department of Corrections parole officer transferring a prisoner, to law enforcement, fire and Emergency Medical Services (EMS) responders who need to be called to the scene of an accident, dependable communication is vital. Public safety agencies cannot effectively protect life and property without mission critical voice communications. Natural disasters, such as wildfires and floods, occur on an ongoing basis. In major disasters—as well as day-to-day incidents, such as structure fires, car accidents, or drug busts—public safety agencies require the use of communications systems and devices, which require radio spectrum.

As per Montana Code Annotated (MCA) 2-17-541 et seq. the Department of Administration (DOA) is the agency within the State of Montana responsible for coordinating public safety Land Mobile Radio (LMR) spectrum and frequency assignments. Currently, the accomplishment of the Department's statutory duties is assigned to the Public Safety Communications Bureau (PSCB), which is organizationally located in the State Information Services Technology Division (SITSD).

This document serves to meet these statutory requirements by describing the processes and procedures for managing administrative, technical, policy, and procedural aspects of spectrum resources in Montana. For example, PSCB serves as a liaison with the Federal Communications Commission (FCC), representing the State on FCC policy and regulatory issues. PSCB manages nearly 250 spectrum licenses held by DOA and provides advice and support to local, state, tribal and federal public safety stakeholders. It also maintains Standard Operating Procedures (SOPs) and licenses for the Montana Mutual Aid Frequency system and coordinates the application and permitting of those frequencies throughout the State.

Because a limited amount of spectrum is available, responsible management is necessary to maintain regulatory compliance, reduce potential for interference, and ensure that spectrum resources are available for essential uses. PSCB provides coordination, technical assistance, spectrum planning and organizational support for a variety of interoperability and communications projects statewide.

The efficient management of spectrum resources is critical for wireless voice and data communications to work effectively, which, in turn, is essential for serving the public and ensuring the safety of public safety personnel. This comprehensive planning document describes the processes used to strive for efficient management of Montana's finite statewide spectrum resources.

II. Governing Statutes

Montana Code Annotated (MCA) 2-17-541 et seq. establishes the Department of Administration (DOA) as the state agency responsible for coordinating with the Federal Communications Commission (FCC) on public safety spectrum matters, developing and managing a public safety Land Mobile Radio (LMR) spectrum utilization plan, and adopting rules for implementing the plan. A brief history of the statute is provided below along with an explanation of each of the three statutes.

A. History of Montana Code Annotated (MCA) 2-17-541 et seq.

This brief history section provides some context behind the passage of Senate Bill 117, which created MCA 2-17-541 et seq. Senate Bill 117 was passed by the 1983 Legislature and was signed into law by Governor Ted Schwinden on March 25, 1983. In 1999 and again in 2001, the Statutes were re-numbered to their current Codes of 2-17-541, 2-17-542, and 2-17-543.

Senator Harold L. Dover (R) of Lewistown sponsored the original bill and it was supported by the Montana Board of Crime Control, the Montana Sheriffs and Peace Officers Association, the Montana Highway Patrol, the Montana Chiefs of Police, and the Communications Division of the Department of Administration.

In testimony, Senator Dover emphasized the importance of improving the efficiency and cost effectiveness of land mobile communications. He also stressed that better spectrum management was needed to avoid overuse and overcrowding of frequencies. In other testimony, proponents expressed consensus about having a single, impartial state agency be responsible for the state's frequency allocation plan. In addition, a recommendation was made to establish a series of emergency mutual aid frequencies for use by law enforcement agencies, fire departments, and local government. Broad support for coordinating emergency public safety land-mobile communications was expressed.

The Montana Sheriffs and Peace Officers representative, Lewis and Clark County's Sheriff Chuck O'Reilly, also stressed in his testimony the importance of having the Department of Administration obtain input from all state and local users to enable it to better understand and troubleshoot spectrum problems.

B. MCA 2-17-541: Contact and Coordination with the FCC

As established in MCA [2-17-541](#), the department serves as the lead contact agency between the State of Montana and the FCC.

MCA 2-17-541. Legislative recognition -- FCC contact agency. The legislature recognizes that prior to issuing a land mobile public safety radio license, the federal communications commission (FCC) attempts to coordinate the license application with other licenses to minimize the interference caused by the overlapping of frequencies on the same channel or an adjacent channel. The department is the contact agency within the state of Montana to assist the FCC in the coordination of land mobile public safety radio frequencies.

History: En. Sec. 1, Ch. 228, L. 1983; Sec. 2-17-311, MCA 1999; redes. 2-17-541 by Sec. 44(3), Ch. 313, L. 2001.

The department, via PSCB personnel, represents the State of Montana on FCC policy and regulatory issues and tracks pertinent issues. When the FCC releases requests for public comment regarding Proposed Rule Making, PSCB ensures that input from the local spectrum coordination community is incorporated in response to those requests by engaging stakeholders, facilitating information distribution, and performing other outreach activities.

1. Coordination of Public Safety LMR Spectrum Licenses

MCA 2-17-541 also establishes the DOA as the State of Montana agency that coordinates public safety LMR spectrum licenses with the FCC. The purpose of frequency coordination is to minimize interference and ensure that frequency licenses are utilized in accordance not only with federal regulations and laws, but also with international agreements.

Since the time when MCA 2-17-541 was passed, the FCC has significantly modified its frequency coordination processes. As a result, individual public safety agencies now work directly with the FCC and/or FCC-recognized certified public safety frequency coordination providers on administrative and technical applications for public safety LMR spectrum. DOA's role has evolved to that as a liaison with the FCC and frequency coordinators.

As described in [Section VII](#) of this plan, the FCC requires all LMR spectrum to be examined via a certified frequency coordination process. Public safety agencies cannot just apply directly to the FCC for spectrum licenses. Because the FCC does not have the staffing to research all applications to ensure they adhere technically to FCC rules and regulations, certified frequency coordination providers are used to analyze applications for completeness and accuracy, perform technical reviews, enter them into a database and submit them electronically to the FCC. Table 8 of this document provides a list of FCC-recognized public safety frequency coordination organizations. Each organization is responsible for selecting and managing the coordinators that review and approve spectrum applications prior to their submittal to the FCC.

DOA, via PSCB staff, works with FCC-designated frequency coordination organizations to help prevent and mitigate interference and to assist Montana public safety agencies in obtaining FCC licensing. Such assistance includes the following activities:

- Providing up-to-date information for radio frequency databases, such as contact or site information.
- Confirming current use of licensed spectrum.
- Providing Letters of Concurrence (LOCs).
- Determining any changes that need to be made in the technical use of each license (antenna height, location changes, frequency use and other related parameters) and coordinating these changes with the frequency coordinator.
- Helping with planning for the best utilization of radio channels and making spectrum recommendations.
- Conducting limited frequency searches.
- Assisting with contracted frequency searches to identify and apply for available spectrum.
- Determining the availability of other state, privately-owned or federal spectrum.
- Collaborating with neighboring states and provinces to ensure reliable, non-interfering radio telecommunications.

2. FCC Regional 700 and 800 MHz Spectrum Planning

Another aspect of assisting the FCC with LMR public safety spectrum relates to taking an active, participatory role in the FCC regional 700 and 800 MHz spectrum planning process for public safety spectrum allocated to Region 25, which is the FCC's single planning region for the State of Montana. These planning groups are independent FCC committees. PSCB helps to facilitate the planning process by assisting with the following activities:

- Soliciting membership on the Regional Planning Committees (RPC)
- Annually convening meetings of the RPCs
- Annually reviewing and updating the Region 25 Plans as needed
- Monitoring various system(s) implementation progress
- Communicating with applicants to determine if implementation of their systems is in accordance with provisions of their applications
- Making recommendations to the Region 25 RPCs on applicants that fail to implement systems
- Making recommendations to resolve inter-regional issues
- Maintaining coordination with neighboring RPCs

These plans are discussed in more depth in [Section V](#) of this document. An overview is available at this link: http://pssb.mt.gov/700_mhz_plan.mcp.x.

C. MCA 2-17-542: Development of a LMR Public Safety Spectrum Utilization Plan

The text of MCA [2-17-542](#), which addresses the development of a land mobile public safety radio frequency utilization plan, is presented below.

MCA 2-17-542. Land mobile public safety radio frequency utilization plan.

- (1) In order to assist the federal communications commission in the coordination of land mobile public safety radio frequencies, the department shall develop and maintain a land mobile public safety radio frequency utilization plan.
- (2) The plan must include but is not limited to:
 - (a) frequency usage and allocation standards relating to radio antenna height and power, types of use intended for the requested frequency, and other technical features of proposed radio systems;
 - (b) technical standards applying to types of radio usage;
 - (c) policies and procedures for the management of statewide mutual aid frequencies.

History: En. Sec. 2, Ch. 228, L. 1983; Sec. [2-17-312](#), MCA 1999; redes. [2-17-542](#) by Sec. 44(3), Ch. 313, L. 2001.

1. Developing and Maintaining a Land Mobile Radio Public Safety Spectrum Utilization Plan

The department is responsible for developing and maintaining a LMR public safety spectrum utilization plan, which defines the processes and procedures for managing administrative, technical, policy, and procedural aspects of spectrum resources. These management responsibilities apply to public safety LMR spectrum licenses in use in Montana.

a. Frequency Usage and Allocation Standards

[Section VI](#) of this Spectrum Utilization Planning document describes how spectrum is divided into different frequency bands depending on its intended use as well as how frequencies are assigned based on FCC allocation tables. [Section VIII, Part C](#) of this document, explains the need for gathering information related to radio antenna height, transmit power and location as part of the frequency application process. These items all affect the area of coverage and are necessary to avoid interference between radio systems caused by the overlapping of frequencies on the same or adjacent channels.

Individual tribal, state and local public safety agencies in Montana work directly with frequency coordinators for analysis of antenna placement, power, types of frequencies and other technical information to ensure compliance with FCC and Industry Canada rules and regulations as well as Department of Homeland Security (DHS) standards.

b. Technical Standards

According to SAFECOM, an emergency communications program of the DHS Office of Emergency Communications, “standards are the underlying ‘laws’ that govern the development of local, national and international services, networks and procedures.” Formal telecommunications agreements—and the standards that codify them—are used worldwide to physically interconnect communications systems and ensure that wide-area voice, data and video communications are possible. Emergency communications projects must be compatible, interoperable, and most importantly, they must meet the needs of end-users.

Specific spectrum management functions performed by PSCB in an effort to meet MCA 2-17-542 include:

- Working to solve frequency interference issues on state-managed spectrum.
- Overseeing the license submittal and management process for state-managed spectrum.
- Identifying potential spectrum resources and obtaining licenses for state management.
- Providing spectrum assistance to state agencies as well as to local and tribal public safety entities.
- Providing spectrum licensing and search assistance to other state agencies as needed.
- Providing coordination with vendors regarding spectrum problems during radio deployment and operations.
- Documenting spectrum ownership, use, and transactions related to state-managed spectrum.
- Consulting, assisting and training local, state and tribal agencies on spectrum acquisition and management.
- Ensuring that public safety spectrum in Montana is used in a manner consistent with goals, objectives and policies of statewide interoperability plans.

c. Policies and Procedures for Management of Statewide Mutual Aid Frequencies

The department has well-established management and oversight procedures for the Montana Mutual Aid frequency program and has the authority to make changes in guidance and Standard Operating Procedures (SOPs) for their use. Responders from different agencies, jurisdictions and disciplines use mutual aid frequencies to communicate during incidents and disasters where neighboring responders are needed for mutual aid assistance.

The *Montana Mutual Aid and Common Frequencies Manual* contains frequency utilization plans for all mutual aid frequencies used in the State of Montana. It also contains policies, procedures and practical applications for using VHF-high band frequencies for mutual aid and common use. The manual has been re-published several times since it was originally published in 1990; the most recent version was printed in 2011. Updated versions of the manual also are available online at this link: http://pssb.mt.gov/mutual_aid_manual.mcp.x.

PSCB engages in the following spectrum management functions to meet MCA 2-17-542 (2) (c):

- Coordinating with members of the Law Enforcement, Fire and EMS Mutual Aid Advisory Councils to solicit input and advice on Mutual Aid Standard Operating Procedures (SOPs) and spectrum issues.
- Regularly updating and publishing SOPs for use of the Montana Mutual Aid Frequencies.
- Granting and issuing permits for use of Montana Mutual Aid Frequencies.
- Consulting, assisting and training local, state and tribal agencies on spectrum acquisition and management of Mutual Aid Frequencies.
- Ensuring that public safety spectrum in Montana is used in a manner consistent with goals, objectives and policies of statewide interoperability plans.

D. MCA 2-17-543: Rulemaking Authority

MCA [2-17-543](#), which appears below, gives the department the authority to adopt rules for implementing this plan and indicates that input for those rules will be obtained from state and local public safety radio users.

MCA 2-17-543. Rulemaking authority.

- (1) The department may adopt rules to implement the land mobile public safety radio frequency utilization plan provided for in 2-17-542.
- (2) The department shall obtain input from all state and local users of public safety radio services.

History: En. Sec. 3, Ch. 228, L. 1983; Sec. 2-17-313, MCA 1999; redes. 2-17-543 by Sec. 44(3), Ch. 313, L. 2001.

[Section XII](#) of this document outlines several goals and objectives for collaborating with key stakeholders so as to regularly solicit input from local, state and tribal public safety LMR spectrum users in a concerted effort to determine needs, facilitate the flow of information and improve spectrum utilization planning for the State of Montana.

Specific PSCS activities designed to meet MCA 2-17-543 include:

- Coordinating with members of the Law Enforcement, Fire and EMS Mutual Aid Advisory Councils to solicit input and advice on Mutual Aid Standard Operating Procedures (SOPs) and spectrum issues.
- Regularly updating and publishing SOPs for use of the Montana Mutual Aid Frequencies.
- Engaging in outreach and public education activities with key stakeholders about state spectrum matters.

III. Spectrum Management

The Radio Frequency (RF) spectrum is the range of electromagnetic radio frequencies used to transmit sound, data, and video across the country. Electromagnetic spectrum is owned by the federal government and is allocated to users through the FCC licensing system. Spectrum is a unique resource that benefits all aspects of society. It provides Montana citizens access to a range of private, commercial, consumer, defense, national security, scientific and public safety applications. The RF spectrum is a statewide resource, much like water, land, natural gas and minerals. Because there is a finite amount of spectrum and a growing demand for it, effectively managing available spectrum is an important priority for the State of Montana.

The RF spectrum typically refers to the full frequency range from 3 kHz to 300 GHz that may be used for wireless communications. However, spectrum is divided into different frequency bands, and various bands are allocated for different uses. For example, the 88-108 MHz band is used to broadcast FM radio to listeners in their automobiles or homes. Another two groups of frequency bands are used for cell phones: 824-849 MHz and 869-894 MHz.

Spectrum management is concerned with all aspects of planning, coordinating and managing the use of the electromagnetic spectrum. Its purpose is to optimize the use of RF spectrum, mitigate interference issues and coordinate wireless communications with neighbors and other users. Frequency management is generally accepted to be a subset of spectrum management. Frequency managers plan, coordinate, and manage the use of specific frequencies within the electromagnetic spectrum. In general, frequency planning is performed to meet the needs of radio services within a geographic area and is based on allocation tables in FCC radio regulations.

The statewide public safety communications system primarily uses the VHF section of the RF spectrum for the voice portion of the statewide radio system. The VHF portion of the radio spectrum has many characteristics that make it useful for wide-area radio communications networks, such as line-of-sight communications, low susceptibility to background noise, practical antenna lengths, and generally longer range coverage than higher frequencies. An abundance of equipment also is manufactured for this bandwidth.

All of the characteristics that make VHF frequencies desirable to the public safety community also make them desirable to several other radio users, which creates significant demand for specific frequencies. This demand generates a need for control over spectrum use to prevent interference and allow for reliable communications. Regulation of the non-Federal government radio frequency spectrum in the United State is provided by the Federal Communications Commission (FCC).

IV. Spectrum Regulators

It is DOA's legislated responsibility to make sure that spectrum in Montana is utilized and managed in accordance with regulations, laws, and international agreements. The bulk of these regulations have been promulgated by the FCC.

A. Federal Communications Commission (FCC)

The FCC, which was established by the Communications Act of 1934, operates as an independent U.S. government agency overseen by Congress. It regulates radio, television, wire, satellite, and cable interstate and international communications in all 50 states, the District of Columbia and U.S. territories. The commission regulates use of non-Federal spectrum, including that used by tribal, state and local public safety agencies.

The FCC promotes the highest and best use of radio spectrum by developing and implementing regulatory programs, processing applications for licenses and other filings, and conducting investigations and analyzing complaints. It consists of several bureaus, each of which perform technical, legal, and administrative functions related to a specific radio service or a group of radio services, including aviation, maritime, broadcasting, industrial/business and public safety.

Public safety consists of several services, including fire, law enforcement, Emergency Medical Services (EMS), forestry-conservation, local government and highway maintenance. Each service has its own assigned frequencies and particular rules.

B. National Telecommunication and Information Administration (NTIA)

Spectrum use by federal government agencies is coordinated by the National Telecommunication and Information Administration (NTIA), which is located within the Department of Commerce. It is principally responsible for advising the President on telecommunications and information policy issues.

The Office of Spectrum Management (OSM), within NTIA, manages the Federal government's use of the radio frequency spectrum. To achieve its goal of protecting and satisfying U.S. spectrum needs and supporting the growth of commercial wireless broadband and technologies, OSM receives assistance and advice from the Interdepartment Radio Advisory Committee (IRAC). The IRAC helps with assigning frequencies to U.S. Government radio stations and in developing and executing policies, programs, procedures and technical criteria related to the allocation, management and use of radio spectrum.

C. International Telecommunications Union (ITU)

The International Telecommunications Union (ITU) regulates international use of radio spectrum and satellite orbits. In 1865, the ITU was founded in Paris as the International Telegraph Union. It took its present name in 1934, and in 1947 became a specialized agency of the United Nations. Although its first area of expertise was the telegraph, the work of ITU now covers a broad range of activities, from digital broadcasting to the Internet, and from mobile technologies to 3D TV. This public-private partnership organization is focused on radio communications, the

creation and dissemination of ITU standards, publication of statistics, and development of telecommunication programs to “bridge the digital divide.”

D. Industry Canada

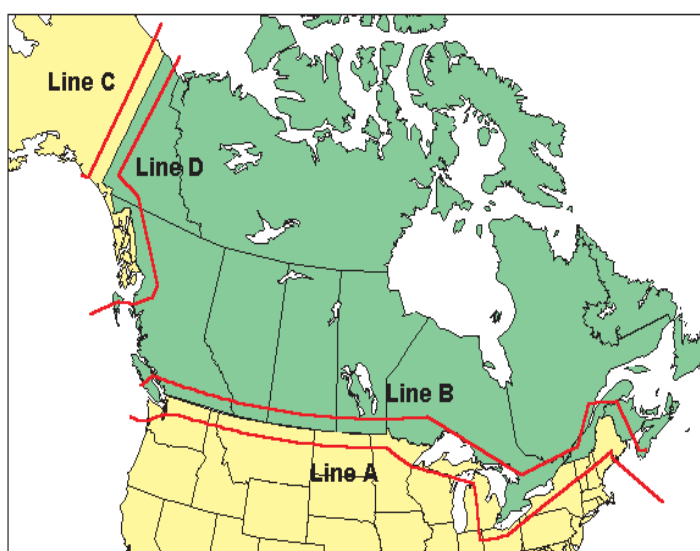
The Industry Canada Ministry was established to foster a growing, competitive and knowledge-based economy. Industry Canada works on a broad range of matters related to industry and technology. Its many entities have distinct mandates, with program activities that are widely diverse. The Spectrum, Information Technologies and Telecommunications (SITT) sector manages Canada’s national radio frequency spectrum to ensure its effective and efficient use. It develops and implements regulations, policies, procedures, processes and incentives to support spectrum management operations.

1. FCC “Line A” Regulations

Spectrum used near Montana’s international border with Canada may require FCC coordination with Canadian authorities. FCC “Line A”¹ Regulations are meant to protect U.S. and Canadian land mobile operations near the U.S./Canadian border from interference. “Line A” is an imaginary line within the US that approximately follows the 48th Parallel across the State of Montana, which is located about 75 miles south of the U.S./Canadian border (a similar zone exists on the Canadian side, “Line B”, as shown in Figure 1).

Through international treaty, the area between “Line A” and the U.S./Canada border is called “the coordination zone.” In simple terms, this means any frequency spectrum use within this zone must be coordinated with the neighboring nation.

Figure 1: “Line A” Map



Montana’s 545-mile border with three provinces of Canada (Alberta, British Columbia, and Saskatchewan) creates spectrum licensing challenges. Spectrum interests of both countries require that spectrum licenses above “Line A” be coordinated with each other. The Federal Communications Commission (FCC) regulates use of non-Federal spectrum use in the United States—including that used by tribal, state and local public safety agencies—while Industry Canada (IC) manages Canada’s national radio frequency spectrum.

¹ Line A. An imaginary line within the U.S., approximately paralleling the U.S.-Canadian border, north of which Commission coordination with the Canadian authorities in the assignment of frequencies is generally required. It begins at Aberdeen, Washington, running by great circle arc to the intersection of 48° N., 120° W., then along parallel 48° N., to the intersection of 95° W., thence by great circle arc through the southernmost point of Duluth, Minnesota, thence by great circle arc to 45° N., 85° W., thence southward along meridian 85° W. to its intersection with parallel 41° N., to its intersection with meridian 82° W., thence by great circle arc through the southernmost point of Bangor, Maine, thence by great circle arc through the southernmost of Searsport, Maine, at which point it terminates. Definition from 47 CFR 90.7.

With the significant needs of public safety and business users in both nations, there is a great demand for spectrum resources. This makes frequency coordination work difficult, yet essential, if radio frequencies used within the coordination zone are not to adversely affect any established U.S or Canadian operations.

The FCC offers a “Line A & C Program” where individuals may enter the coordinates of their location, and the program will indicate if it is south of Line A or west of “Line C”. To learn more about frequency coordination above Line A, please visit:

http://wireless.fcc.gov/uls/index.htm?job=line_a_c.

V. Frequency Bands, Radio Signal Propagation and Public Safety Spectrum

Spectrum is divided into different frequency bands, and various bands are used by a variety of communications services including broadcasting, cellular, satellite, public safety and two-way radio. Each frequency range has a band designator and each range of frequencies behaves differently and performs different functions. Table 1 shows frequency band designators, names, ranges, symbols and common applications.

Table 1: Frequency Bands

Band Designator	Frequency Band Name	Band Symbol	Frequency Range	Common Applications
1	Extremely Low Frequency	ELF	3 Hz - 30 Hz	Underwater Communications
2	Super Low Frequency	SLF	30 Hz - 300 Hz	AC Power (though not a transmitted wave)
3	Ultra Low Frequency	ULF	300 Hz - 3000 Hz	Submarine & Underground Mine Communications
4	Very Low Frequency	VLF	3 - 30 kHz	Navigational Beacons
5	Low Frequency	LF	30 - 300 kHz	AM Radio
6	Medium Frequency	MF	300 - 3000 kHz	Aviation and AM Radio
7	High Frequency	HF	3 - 30 MHz	Shortwave Broadcasts, Citizens' Band Radio, Amateur Radio
8	Very High Frequency	VHF	30 - 300 MHz	FM Radio, Land Mobile and Maritime Mobile Communications
9	Ultra High Frequency	UHF	300 - 3000 MHz	Television, Mobile Phones & Data, Wireless Communication, GPS
10	Super High Frequency	SHF	3 - 30 GHz	Satellite Links, Wireless Communication, Radar
11	Extremely High Frequency	EHF	30 - 300 GHz	Astronomy, Remote Sensing, Fixed Point-to-Point Links
12	Terahertz or Tremendously High Frequency	THz	300 - 3,000 GHz	Sub-millimeter Radiation/Terahertz Imaging

Spectrum is divided into management units of a specific bandwidth, centered on a particular frequency, for a specific use. These frequencies (and appropriate operating range) are allocated by the federal government through a licensing system. For example, the State of Montana operates on the **BLUE** channel as part of the Montana Mutual Aid Frequency System. This frequency is centered on 155.4750 MHz. It is part of the Very High Frequency (VHF) segment of the electromagnetic spectrum, and the State of Montana is authorized to use 12.5 kHz of spectrum width (6.25 kHz on either side of the 155.4750 MHz center).

A. Radio Signal Propagation Influence on Frequency Band Selection

A major criterion in the selection of a frequency band is the affect it has on range. Each agency has a particular geographic area into which it needs solid radio coverage, and the choice of radio spectrum affects how that coverage will be achieved.

In general, lower frequency radio signals travel farther than higher frequency radio signals. The Very High Frequency (VHF) band is the radio frequency range from 30 MHz to 300 MHz, while the Ultra High Frequency (UHF) band is situated between 300 and 3,000 MHz. VHF signals travel farther than UHF, but are also more affected by obstructions such as buildings and mountains. However, a repeater located on a mountaintop in Montana overlooking a great expanse of territory can carry a VHF signal several hundreds of miles.

Since higher frequency radio signals generally require more repeaters and antenna towers, the cost of a UHF radio system over a large geographic area tends to be higher due to the greater quantity of tower sites needed. The greater range and lower cost of the VHF band makes it a good match for the operating requirements of the majority of Montana's emergency responders. As a result, Montana's Public Safety Communications System has been developed utilizing the VHF spectrum.

The City of Billings, which has a higher density of tall buildings and a larger population base than other cities in Montana, has an 800 MHz radio system utilized by the City's fire services and police department. The system provides for better indoor building coverage with less overall range of coverage.

B. Spectrum Available to the Public Safety Community

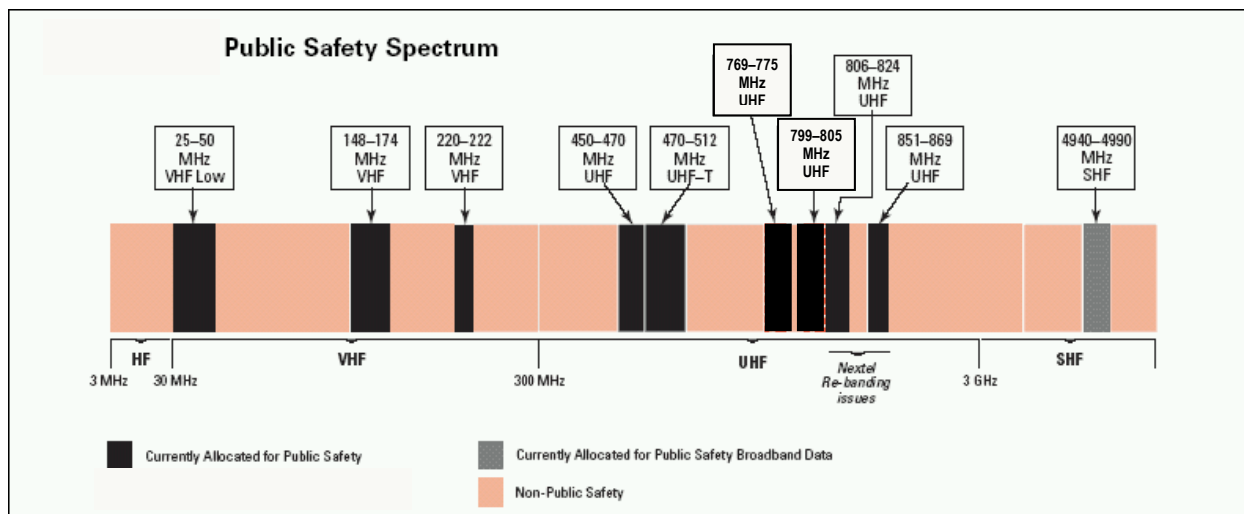
Spectrum planning is based on allocation tables in FCC radio regulations. The FCC's Table of Frequency Allocations is located at this link: <http://transition.fcc.gov/oet/spectrum/table/Welcome.html>. The following radio spectrum bands are assigned to state and local public safety users on a national basis:

- Currently allocated for public safety:
 - 25 to 50 MHz VHF Low Band
 - 148 to 174 MHz VHF High Band
 - 220 to 222 MHz VHF
 - 450 to 470 MHz UHF
 - 470 to 512 MHz UHF T Band²
 - 769-775 MHz (Channels 1-960) UHF
 - 799-805 MHz (Channels 961-1920) UHF
 - 806 to 824 MHz UHF
 - 851 to 869 MHz UHF
- Currently allocated for public safety broadband data
 - 4940 to 4990 MHz SHF
- Public safety broadband communications - "D Block"
 - 763 to 768 MHz UHF
 - 793 to 798 MHz UHF

² Frequencies from 470-512 MHz are designated as "UHF-TV Sharing Frequencies" and are referred to as the T-Band. Passage of H.R. 3630, the Middle Class Tax Relief and Job Creation Act of 2012, requires that public safety return T-band spectrum in 13 of the nation's largest television markets within 11 years.

The remainder of the spectrum is allocated for non-public safety use. This information is depicted in the following graphic, courtesy of the National Institute of Justice.³

Figure 2: Public Safety Spectrum



Several of the frequency bands listed in Table 1 are further divided for specific, regulated uses, including public safety. The HF (High Frequency), VHF (Very High Frequency), UHF (Ultra High Frequency), and SHF (Super High Frequency) bands typically are of the most interest to the public safety community. Radio systems operating in the 806-824 MHz and 851-869 MHz portion of the UHF band are often referred to as “800 MHz systems.” Frequencies above 1 GHz are commonly called “microwave” bands.

Table 2 illustrates the additional divisions of radio frequency bands, explains typical uses and describes their prevalence in Montana.

Table 2: Radio Frequency Bands, Typical Use and Prevalence in MT

Frequency Band	Typical Use	Use in Montana
HF - High Frequency	Shortwave Broadcasts; Citizens' Band Radio; & Amateur Radio analog voice transmission over large areas. The Amateur Radio Emergency Service (ARES), trained amateur radio volunteers who assist with public service and emergency communications, uses rally HF frequency 3.880 MHz. Montana’s Radio Amateur Civil Emergency Service (RACES) rally HF frequency is 3.947 MHz.	Limited

³ <http://www.nij.gov/nij/topics/technology/communication/radios/spectrum-allocation.htm>

Frequency Band	Typical Use	Use in Montana
VHF - Very High Frequency	Analog and digital voice and data transmission; two-way land mobile communications; maritime mobile communications FM Radio; alert paging; Television broadcasts; line-of-sight ground-to-aircraft and aircraft-to-aircraft communications; amateur radio; & weather radio	Widespread
UHF - Ultra High Frequency	Analog and digital voice and data transmission; two-way radios; amateur radio; mobile phones, wireless LAN, GPS, Bluetooth, television broadcasts, microwave ovens & radio astronomy	Moderate
700 MHz	Analog and digital voice and data transmission; two-way mobile communications; & broadband data	Limited
700 MHz "D-Block"	H.R. 3630, the Middle Class Tax Relief and Job Creation Act of 2012, included Section 6101 which directs the FCC to reallocate the 700 MHz "D Block" (758-763 MHz/788-793 MHz) section of the spectrum from commercial to public safety use. This reallocation means that public safety has 20 MHz of contiguous spectrum to deploy a nationwide interoperable public-safety broadband network.	None at the time of publication
800 MHz	Analog and digital voice and data transmission; & two-way mobile communication	Limited to the Billings region
900 MHz	Limited voice communication and low capacity microwave	Limited
Microwave Bands	2.4 GHz - Unlicensed	Low capacity point-to-point communication and open data applications
	4.9 GHz	Low capacity point-to-point communication and data applications
	6 GHz	Point-to-point transmission
	11 GHz	Point-to-point transmission
	18 GHz	Point-to-point transmission
	23 GHz	Point-to-point transmission

C. 700 MHz Region 25 Plan

In 1998, the FCC established a structure to allow Regional Planning Committees (RPCs) optimal flexibility to meet state and local needs, encourage innovative use of the spectrum, and accommodate new and unanticipated developments in technology and equipment. There are fifty-five RPCs, and the FCC required each committee to submit its plan for General Use spectrum. The entire State of Montana makes up Region 25.



Planning for the region's 700 MHz spectrum began in 2002. On April 17, 2012, the Public Safety and Homeland Security Bureau of the FCC announced its approval of the Region 25 (Montana) 700 MHz Public Safety Plan. Montana's 700 MHz RPC submitted its plan for General Use

spectrum in the 769-775/799-805 MHz band to the FCC on August 22, 2011. The FCC requires each regional plan to contain certain elements, and the plan must be coordinated with adjacent regions. Region 25 coordinated its plan with all four adjacent regions including: Region 12 (Idaho), Region 32 (North Dakota), Region 38 (South Dakota), and Region 46 (Wyoming).

Two distinct parts make up the 700 spectrum:

1. 763-768/793-798 MHz for broadband communications
2. 769-775/799-805 MHz for narrowband communications

The Regional 25 Montana 700 MHz Plan is for the public safety narrowband portion of this spectrum. The purpose of the Plan is to define the procedures used to manage, allocate, make application and resolve 700 MHz narrowband spectrum disputes.

PSCB assists the FCC by taking an active, participatory role in the FCC regional 700 MHz spectrum planning process for public safety spectrum allocated to Region 25. This planning group is an independent FCC committee. PSCB helps to facilitate the planning process by assisting with the following activities:

- Soliciting membership on the Regional Planning Committees (RPC)
- Annually convening meetings of the RPCs
- Annually reviewing and updating the Region 25 Plans as needed
- Monitoring various system(s) implementation progress
- Communicating with applicants to determine if implementation of their systems is in accordance with provisions of their applications
- Making recommendations to the Region 25 RPCs on applicants that fail to implement systems
- Making recommendations to resolve inter-regional issues
- Maintaining coordination with neighboring RPCs

To date, Montana public safety agencies have not utilized the 700 MHz spectrum. However, the advent of multi-band and software defined radios will eventually increase the value and utilization of this spectrum. Moreover, as the country moves towards public safety broadband deployment, it is advantageous to have in place a 700 MHz narrowband plan and an active Regional Planning Committee.

Montana's 700 MHz Plan is located at this link: http://pssb.mt.gov/700_mhz_plan.mcp.x.

D. 800 MHz Region 25 Plan

In December of 1983, the U. S. Congress directed the FCC to develop a national plan to meet the communications needs of state and local public safety authorities. The National Public Safety Planning Advisory Committee (NPSPAC) assisted in the development of this plan and provided guidelines for frequency allocation, re-use and turn back, regional interoperability, spectrum requirements, and adjacent region operations. After consideration of NPSPAC's Final Report and comments filed in Docket No. 87-112, the FCC released its Report and Order in December 1987. This order not only established the framework for a national public safety plan, but also allocated six (6) MHz of spectrum in the 800 MHz band for its implementation.

The 800 MHz Region 25 (Montana) Plan requires minimum coverage areas to provide for maximum frequency reuse. It encourages consolidation of small systems, establishes requirements for trunking and packing assignments through an efficient mechanism, and explains how interoperability is achieved through use of International Common Channels and additional regional mutual aid channels.

The Plan also provided a basis for proper spectrum utilization by supplying a pool of frequencies for each county, a pool for state agency use, adequate reserve allocations for future needs in all areas, and a method to appeal initial allocations based on need. These pool assignments of the 821-824/866-869 MHz bands met the goals of spectrum efficiency and interference protection.

PSCB has participated in the FCC regional 800 MHz spectrum planning process for public safety spectrum allocated to Region 25; however, the regional review group is an independent FCC committee. It is to consist of the local APCO frequency advisor, a state agency representative and one representative each from the police, fire and EMS disciplines. The committee has the following responsibilities:

- Reviewing applications which do not fall within the stated guidelines provided for in the plan
- Settling disputes concerning the plan and/or its application
- Meeting annually to review implementation of the plan

The original plan was submitted to the FCC on June 15, 1992 and is available at this link: http://pssb.mt.gov/content/docs/Region_25_800_MHz_Plan_web.pdf. Currently, the City of Billings is the only area in Montana using spectrum in the 800 MHz band.

As part of a national band reconfiguration, the FCC approved a streamlined plan amendment on Jan. 11, 2011 to shift the former NPSPAC band 15 MHz lower in the band to 806-809/851-854 MHz. A copy of this FCC Public Notice is available at this link: http://pssb.mt.gov/content/docs/radio/800_MHz_streamlined_plan_amendment_2011_01_11.doc

VI. FCC Frequency Pools

DOA has licensed spectrum for use by Montana's public safety community in the FCC radio service frequency pools listed in Table 3. An explanation of each of these frequency pools is then provided.

Table 3: FCC Frequency Pools Licensed for MT Public Safety Use

FCC Radio Service	FCC Radio Service Code	Radio Service Description	Frequency Pool	FCC Regulatory Section http://wireless.fcc.gov/rules.html
Coast and Ground (CG)	PC	Public Coast Stations, Auctioned	Maritime Service Frequencies	47 CFR Part 80
Land Mobile Private (LP)	IG	Industrial/Business Pool, Conventional	Industrial/Business Pool Frequencies	47 CFR Part 90
Land Mobile Private (LP)	PW	Public Safety Pool, Conventional	Public Safety Pool Frequencies	47 CFR Part 90
Land Mobile Private (LP)	SL	Public Safety 700 MHz Band - State License	Public Safety Pool Frequencies	47 CFR Part 90
Land Mobile Private (LP)	PA	Public Safety 4940-4990 MHz Band	Public Safety Pool Frequencies	47 CFR Part 90
Land Mobile Private (LP)	YW	Public Safety Pool, Trunked	Public Safety Pool Frequencies	47 CFR Part 90
Microwave (MW)	MW	Microwave Public Safety Pool	Microwave Public Safety Pool	47 CFR Part 101

A. Marine Service Frequency Pool

In the mid-2000's, the State of Montana's Department of Administration successfully purchased inland rights to use several market-based VHF Public Coast (VPC) marine channel licenses, which are designated with a "PC" FCC Radio Service Code. Within the three market licenses presented in Table 4, the State of Montana has access to twelve designated narrowband repeater channels (12 Band B fixed-station frequencies paired with 12 Band A mobile frequencies) and five individual Band A mobile frequencies. These frequencies are utilized for trunking and conventional use for the statewide public safety communications system and other public safety purposes. Current statewide use is further defined in the Marine Channel Use Plan developed and managed by the State of Montana, Department of Administration and presented in Appendix A.

Table 4: Marine Service Frequencies Licensed by DOA for MT Public Safety Use

Call Sign	License Type	Fre-quencies	Location Name	FB (Base)/MO (Mobile)	User	Purpose	Expiration
WPOJ515	PC	VHF	VPC29 Great Falls	FB2 (Mobile Relay)/MO	Market	Trunking/Conventional	5/19/2019
WPOJ516	PC	VHF	VPC030 Missoula	FB2/MO	Market	Trunking/Conventional	5/19/2019
WQAV770	PC	VHF	VPC028 Billings	FB2/MO	Market	Trunking/Conventional	5/19/2019

B. Industrial/Business Pool Frequencies

Industrial/Business Pool Frequencies are only available to public safety agencies under certain FCC rules or under a waiver petition if no Public Safety Pool Frequencies are available. Industrial/Business radio systems serve a wide variety of communications needs. Companies, large and small, use their radio systems to support business operations, safety and emergency needs. Although each licensee uses its system to serve specific requirements that vary from entity to entity, one characteristic differentiates all these private-wireless licensees from commercial licensees. They use radio communications as a tool, as they would any other tool or machine, to contribute to the production of some other good or service. In contrast, for commercial wireless service providers, the services offered over the radio system are the end product.

The regulations listing frequencies in the Industrial/Business Pool, which are designated with an “IG” FCC Radio Service Code, are contained in Subpart C of Part 90, Title 47 of the CFR. At the time of publication, the State of Montana only had two licenses in the IG category, as follows:

**Table 5: Industrial/Business Frequencies Licensed by DOA
for MT Public Safety Use**

Call Sign	License Type	Fre- quencies	Location Name	FB (Base)/ MO (Mobile)	User	Purpose	Expiration
KUT299	IG	157.6800	Helena (1115 Roberts St.) & 40 km	FB/MO	U of M - Helena	Internal Comm.	3/7/2023
WPTH765	IG	173.3375	Powell County (600 Conley Lake Rd.)	FXO	Powell County	Control Stations	10/4/2021

C. Public Safety Pool Frequencies

The FCC has reserved several blocks of frequencies for exclusive use by public safety agencies. Public safety entities consist not only of fire, police and emergency medical services (EMS), but also local government, forestry-conservation and highway maintenance. In addition, FCC rules allow for a wide variety of organizations and individuals to use public safety frequencies for the following categories of activities: medical services, rescue organizations, veterinarians, persons with disabilities, disaster relief organizations, school buses, beach patrols, establishments in isolated places, communications stand-by facilities, and emergency repair of public communications facilities.

The State of Montana has licensed Public Safety Pool Frequencies designated with a “PW” for conventional or “YW” for trunked FCC Radio Service Code. DOA holds licenses and manages most of the trunking and microwave spectrum used in the statewide public safety communications system. The concept of trunking was developed in the face of increasing frequency congestion back in the early 1980s. In general, the term refers to an efficient electronic method for sharing a relatively small number of frequencies among a relatively large number of users.

The list of Public Safety Pool Frequencies managed by DOA under FCC Federal Registry Number 0001643626 may be found in Appendix B. The list of Public Safety Pool Frequencies managed by DOA under FCC Federal Registry Number 0004535803 (Montana Statewide Public Safety System) may be found in Appendix C.

One State of Montana Public Safety 700 MHz Band-licensed frequency, designated with an “SL” FCC Radio Service Code, is listed in Table 6 along with a 4.9 GHz Band licensed for security and emergency response use in the Capitol Complex in Helena.

Table 6: 700 MHz & 4.9 GHz Frequencies Licensed by DOA for MT Public Safety Use

Call Sign	License Type	Fre-quencies	Location Name	FB (Base)/MO (Mobile)	User	Purpose	Expiration
WPTZ809	SL	700.000	Statewide	FB2/MO	Public Safety	700 MHz	5/14/2017
WQLK242	PA	4.9 GHz	Capitol Complex	MO	Public Safety	Security & Emergency Response	02/19/2020

D. Microwave Public Safety Pool

Microwaves are very short waves in the upper range of the radio spectrum used mostly for point-to-point communications systems. The prefix "micro-" in the word, "microwave," is not intended to suggest a wavelength in the micrometer range. Instead, it simply means that microwaves are "small" compared to waves used in typical radio broadcasting. They have shorter wavelengths. This part of the radio spectrum ranges across frequencies of roughly 1.0 to 30 GHz. However, some commercial systems are now transmitting in ranges up to 90 GHz and low-capacity public safety uses may be in the 900 MHz range.

Microwave transmission refers to the technology of transmitting information or energy by the use of these small radio waves. Point-to-point microwave facilities are growing in use as wireless communications systems grow. These facilities are often used as backhaul and backbone links, which provide an economical solution for serving less populated regions of the country. The statewide public safety communications system relies on a licensed digital microwave backbone system to connect (backhaul) voice and data signals to communications sites and dispatch centers around the state.

In 1996, FCC rules for both common and private carriers of point-to-point microwave services were consolidated into a single rule: Part 101. Common Carrier Fixed Point-to-Point Microwave Service station licenses are granted to applicants who provide communications service to the public. Private Operational-Fixed Point-to-Point Microwave station licenses are granted to applicants for their own internal communications requirements, including public safety. Appendices B and C list all the microwave frequencies that are licensed by the State of Montana for public safety use.

E. Federal Spectrum Available for Public Safety Communications in Montana

On Oct. 3, 2006, the U.S. Department of the Interior (DOI) signed an agreement with the State of Montana that established a sharing agreement to enhance emergency communications connectivity with the DOI, increase cooperation between the parties, and advance public safety and security.

The agreement outlines conditions by which DOI agency employees may use the statewide public safety communications system at no charge. In return, DOI has agreed to provide DOI NTIA-assigned frequencies for Montana to integrate within its P25 public safety trunked radio system. DOI employees use the statewide communications system to interoperate with other federal, state, local and tribal fire, law enforcement and emergency service users. Agreements to use these frequency assignments are still ongoing.

On July 26, 2013, Montana received a Certification of Spectrum Support for DOI support of the P25 VHF Statewide Trunked LMR System, which allows federal participation in the Montana statewide system and provides for federal frequency assignments as necessary.

VII. License Management Process

A. Spectrum Licensing

The administration of spectrum assignments – or licensing – contributes to the proper functioning of spectrum management operations. The spectrum assignment process includes analysing requirements for proposed radio services and assigning frequencies in accordance with FCC and state spectrum-allocation plans.

As mentioned previously, the FCC is responsible for managing and licensing the electromagnetic spectrum for commercial and non-commercial users, including tribal, state, county and local public safety users. The FCC approves or denies license applications, giving particular agencies or jurisdictions permission to use a frequency for the intended purpose under which the license is granted.

After identifying a frequency, a license is required before an agency can operate on it. But even though an apparently clear frequency has been identified, it could still be rejected during the licensing process, or have limitations on its use, such as power limitations or areas of operation. In Montana, the Canadian government may object to the use of a certain frequency in areas within “Line A” near Canada’s border.

Licenses, referred to as Call Signs, contain more than just a frequency assignment. They also contain technical and geographic data including location, power limitations, number of mobile and portable units allowable, area of operation, antenna heights, type of emissions, Canadian restrictions, control points, and FAA tower painting and lighting requirements. Once a radio or radio system has been licensed, any change to that system which could involve moving the transmitting equipment, adding or moving any control point, changing an antenna location or height, or changing transmit frequencies; will require a modification to the radio license. License applications—whether new, renewals, or modifications—take an average of 90 days to be returned from the FCC. Also, the issuance of a license does not mean ownership of that frequency; rather, it secures rights to utilize the spectrum under the conditions of the license.

The FCC does not charge government entities license fees, but every new application for frequency use or any modification to the location/technical use of a frequency must go through a technical evaluation. The FCC requires that applications be reviewed by a certified frequency coordinator and these organizations do charge fees.

B. Frequency Coordination Requirements

An agency applying for a license to operate a land mobile radio must submit an FCC application to a frequency coordinator who will process the application and submit it electronically to the FCC. The coordination process is essential to ensure the numerous systems across the country have clear and interference-free operation on critical public safety radio systems.

Frequency coordination is required when applying for new frequency assignments and for changes to existing licenses, that impact use, coverage area, location, power or antenna changes, increased use or other similar technical modification. So, for example, if the antenna on a site is raised, power is increased or if a site is relocated, frequency coordination will be required. Frequency coordination is also required to reinstate a license that has expired for more than thirty days. Coordination fees often depend on the extent of a license change.

The FCC uses the following designations for various public safety frequency coordinators:

Table 7: Public Safety Frequency Coordinator Designations

Frequency Designations	Public Safety Coordinators
PF	Fire Coordinator
PH	Highway Maintenance Coordinator
PM	Emergency Medical Coordinator
PO	Forestry-Conservation Coordinator
PP	Police Coordinator
PS	Special Emergency Coordinator
PX	Any Public Safety Coordinator, except the Special Emergency Coordinator

C. Public Safety Frequency Coordination Providers

The FCC recognizes the list of certified public safety frequency coordination providers given in Table 8 below. Updated listings are available on the FCC website at this link:
<http://transition.fcc.gov/pshs/public-safety-spectrum/coord.html>.

Table 8: FCC-Recognized Certified Public Safety Frequency Coordination Providers

FCC-Recognized Certified Public Safety Frequency Coordination Providers for Frequencies Below 512 MHz	
<p>For frequencies designated with:</p> <ul style="list-style-type: none"> • PP = Police • PX = Any Public Safety, except the Special Emergency <p>in Section 90.20 of the FCC's rules.</p>	<p><u>Association of Public-Safety Communications Officials, Inc. (APCO)</u> Automated Frequency Coordination Department 351 N. Williamson Blvd. Daytona Beach, FL 32114-1112 Phone: 888-272-6911 Fax: 386-322-2502 Email: afc@apcointl.org Website: www.apcointl.org/</p>
<p>For frequencies designated with:</p> <ul style="list-style-type: none"> • PF = Fire • PM = Emergency Medical • PX = Any Public Safety, except the Special Emergency <p>in Section 90.20 of the FCC's rules.</p>	<p><u>International Municipal Signal Association (IMSA)</u>⁴ 122 Baltimore Street Gettysburg, PA 1732 phone: 717-398-0823 phone: 855-803-1465 fax: 717-778-4237 email: john.theimer@frequencycoordination.org</p>

⁴ The International Municipal Signal Association/International Association of Fire Chiefs (IMSA/IAFC) and the Forestry Conservation Communications Association (FCCA) have combined their frequency coordination activities in a new non-profit corporation named the Public Safety Communications Associates (PSCA). PSCA will be using the services of [FreqEasy](#) LLC for application processing. IMSA and IAFC's frequency-coordination applications may still be entered electronically at [SiteSafe on the IMSA website](#).

<p>For frequencies designated with:</p> <ul style="list-style-type: none"> • PF = Fire • PM = Emergency Medical • PX = Any Public Safety, except the Special Emergency <p>in Section 90.20 of the FCC's rules</p>	<p><u>International Association of Fire Chiefs (IAFC)</u> 4025 Fair Ridge Drive, Suite 300 Fairfax, VA 22033-2868 Phone: 703-273-0911 Fax: 703-273-9363 http://www.iafc.org/</p>
<p>For frequencies designated with:</p> <ul style="list-style-type: none"> • PO = Forestry-Conservation • PX = Any Public Safety, except the Special Emergency <p>in Section 90.20 of the FCC's rules.</p>	<p><u>Forestry Conservation Communications Association (FCCA)</u> 122 Baltimore Street Gettysburg, PA 17325 Phone: 717-338-0815 Phone: 833-803-1465 Fax: 717-778-4237 Email: john.theimer@frequencycoordination.org Website: www.fcca-usa.org/</p>
<p>For frequencies designated with:</p> <ul style="list-style-type: none"> • PH = Highway Maintenance • PX = Any Public Safety, except the Special Emergency <p>in Section 90.20 of the FCC's rules.</p>	<p><u>American Association of State Highway and Transportation Officials (AASHTO)</u> c/o RadioSoft 8900 Dicks Hill Parkway Toccat, GA 30577 Phone: 888-601-3676 Fax: 706-754-2745 Email: angela@radiosoft.com; kathigit@radiosoft.com Website: www.aashto.org</p>
<p>For frequencies designated with:</p> <ul style="list-style-type: none"> • PS = Special Emergency <p>in Section 90.20 of the FCC's rules.</p>	<p><u>Enterprise Wireless Alliance (EWA)</u> Attn: Frequency Coordination Department 8484 Westpark Drive, Suite 630 McLean, VA 22102 phone: 703-528-5115 fax: 703-524-1074 email: ila.dudley@enterprisewireless.org</p> <p><u>Forest Industries Telecommunications (FIT)</u> 1565 Oak Street Eugene, Oregon 97401 phone: 541-485-8441 fax: 541-485-7556 email: license@landmobile.com</p> <p><u>Manufacturers Radio Frequency Advisory Committee, Inc. (MRFAC)</u> c/o RadioSoft 8900 Dicks Hill Parkway Toccat, GA 30577 phone: 706-754-8912 email: coord@mrfac.com</p>

<p>For frequencies designated with:</p> <ul style="list-style-type: none"> • PS = Special Emergency <p>in Section 90.20 of the FCC's rules.</p>	<p>PCIA/IAFC/IMSA Attn: Don Andrew, Frequency Coordination Department 901 N. Washington St., Suite 600 Alexandria, Virginia 22314-1561 phone: 703-759-7502 fax: 703-836-1608 email: andrewd@pcia.com</p> <p>Utilities Telecom Council 1129 20th Street NW, Suite 350 Washington, DC 20036 phone: 202-872-0030 fax: 202-872-1331 email: spectrumservices@utc.org</p>
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VIII. FCC License Application Process

A. Universal Licensing System (ULS)

The FCC's Universal Licensing System (ULS) is the consolidated database and electronic application filing system for most wireless radio services. The system lets applicants use secure Internet access to research, manage and renew wireless licenses through a password-protected account. ULS provides access to licenses and pending applications, and it guides applicants through the filing process until the application is completely submitted electronically.

The ULS also allows applicants to search for applications or licenses by file number, applicant or licensee name, application purpose, call sign or radio service. Application and license data also may be downloaded. In addition, the ULS offers mapping software to visually display the specific location or a geographic area of wireless licenses. Public safety entities applying for an FCC license require a Federal Registration Number (FRN) and the completion of an online application. No manual forms are needed when entities file online via ULS.

B. Federal Registration Number (FRN) Assignment and Management

An FCC Federal Registration Number (FRN) is a unique ten-digit number that is assigned to entities to allow them to do business with the FCC. The FCC uses the FRN to allow quick access to license documents and to determine if all of the registrant's fees have been paid. An entity may have more than one FRN. The FRN must be provided any time an application is filed in the FCC's Universal Licensing System.

If an agency wants to conduct business with the FCC, it must first register through the [FCC's COMmission REgistration System \(CORES\)](http://www.fcc.gov/cores) <http://www.fcc.gov/cores> website for an FRN. Upon registration, the agency will be assigned one. This number will be used to uniquely identify the agency in all transactions with the FCC. A password also will be needed, and it is assigned by the registration system. However, agencies may change their passwords at any time. Once registered, it is important to return to ULS and associate any existing call signs an agency has with the new FRN.

Once assigned an FRN, it is important to keep ownership and contact information up to date. A complete description of services available through the ULS at the following link: <http://wireless.fcc.gov/uls>.

C. FCC Frequency Application Process

1. Information Gathering

After obtaining an FRN and determining an agency's spectrum requirements, detailed information about its radio system must be compiled to provide to the frequency coordinator, such as:

- **Frequency/ Frequency Band:** The desired frequency band or specific frequency the agency wants to operate on.
- **Mobile Radio Count:** The number of mobile radios that will operate on the system.

- **Output Power/ERP:** The output power of the system amplifier, as well as the effective radiated power (ERP), which is the system's power at the antenna.
- **Emission Designators:** Information such as modulation, signal, type of information and size of the channel, which determines the channel width the system will occupy.
- **International Coordination:** For stations near the Canadian border, Canadian licensing information will need to be consulted.

Antenna information must also be obtained, as follows:

- **Structure:** The most common codes are:
 - B - Building with side mounted antenna
 - BANT - Building with antenna on top
 - MAST - Self-supported structure
 - PIPE - Pipe antenna
 - POLE - Any type of pole antenna
 - TOWER - Free standing guyed structure used for communications purposes
- **Height:** Antenna height from ground to tip, in meters.
- **Support Structure Height:** If antenna is mounted on top of a building, it is the distance from the ground to the top of the building.
- **Coordinates:** All coordinates (latitude/longitude) must be referenced to the North American Datum of 1983 (NAD83). Latitude and longitude must be listed in degrees, minutes and seconds.
- **Site Elevation:** This elevation is the antenna site ground elevation above sea level, in meters.
- **FCC Antenna Structure Registration:** Agencies may refer to ASR [TOWAIR Determination](#) to determine if the antenna needs to be registered with the FCC.

These items all affect the area of coverage and are necessary to find one or more optimum frequency pairs. After considering nearby co-channel (same frequency) and adjacent-channel repeaters (and often adjacent-area counterparts), they are judged to be clear frequencies. This means they are considered unlikely to cause interference to—or be interfered with—by an already existing installation. Such a determination takes into consideration the geographic location, topography, and the physical and operating parameters of the system and of other users in the area of interest.

2. FCC Antenna Structure Registration System and FCC Tower Construction Notification

While the location of wireless facilities is generally a local matter subject to zoning ordinances and statutes, the FCC has some rules relating to the location and construction of communications towers. For example, to ensure safe air navigation, FCC rules require the registration of towers or other structures that support antennas—such as water towers or buildings—that are more than 200-feet in height or located near an airport runway. The FCC administers these requirements through the Antenna Structure Registration (ASR) system. The FCC also administers rules to ensure that the construction of communications towers complies with environmental and historic preservation laws, including the National Environmental Policy Act and National Historic Preservation Act. In addition, the FCC has provided guidance on how long a state or local government has to act on a zoning application.

3. Frequency Coordination

FCC certified frequency coordinators will assign an agency with one or more frequencies on which to operate, at a specified maximum power, within a specified geographic area. The coordinator will choose these frequencies carefully to avoid interference between the agency's usage and other existing users. Applications for new frequency assignments, changes to existing facilities, or operation at temporary locations must include a showing of frequency coordination.

In the event that the frequency coordinator sees the potential for interference from an adjacent or co-channel frequency, the coordinator may require that a Letter of Concurrence (LOC) be obtained. An LOC acknowledges that some interference may be possible and indicates how it will be remedied following FCC rules for shared use of channels.

4. Filing the Application for FCC Approval

The frequency coordinator typically submits the license application on the agency's behalf to the Licensing and Technical Analysis Branch of the FCC in Gettysburg, Pennsylvania. From there the FCC will coordinate spectrum use with other Federal agencies and possibly other National governments (such as Canada and Mexico). Once those hurdles are cleared and everything is in order, the license is granted and the system can be put on the air. Minor license modifications or administrative updates may be filed directly with the FCC through the Universal Licensing System (ULS) without necessarily going through a frequency coordinator. Once the FCC approves the application, the agency may begin operation.

5. License Renewals

Agencies must file for renewal of their licenses no later than the expiration date of the license period, and no sooner than 90 days prior to expiration by filing FCC Form 601, Purpose Code: RO, through the ULS. (Additional information about FCC forms and purpose codes is provided below.) The agency will have to renew its license every five years and keep the FCC informed about any changes or additions to its system.

a. FCC Forms

Here is a list of typical FCC forms that are used in connection with FCC licensing:

- **FCC Form 601:** This form, the first four pages of which are referred to the "Main Form", is used to file initial applications and most licensing-related requests and notifications. Form 601 is a multi-purpose form that consists of the main form and several optional schedules. Applications, amendments, modifications or other requests will contain only one main form, but could contain several optional schedules as needed.
- **FCC Form 602:** Form 602 is used to provide information regarding license ownership as required by FCC rules.
- **FCC Form 603:** This form is used to assign wireless licenses from one party to another, including partitioning or disaggregation, and transfer control of wireless licenses that require FCC approval or notifications.
- **FCC Form 605:** This short form is used for applications in the Ship, Aircraft, Amateur, Restricted and Commercial Operator, and General Mobile Radio services.

- **FCC Form 854:** Form 854 is used for Antenna Structure Registrations (ASR).

b. Application Purposes

The purpose for which the application is being filed must be specified using the appropriate two-letter abbreviation as presented in Table 9 below. Only one purpose may be used per application.

Table 9: FCC License Application Purpose Codes

Abbrevia- tion	Meaning	Purpose
<i>AM</i>	<i>Amendment</i>	Used to amend a previously-filed, currently pending application(s). Item 4 is used to provide the File Number(s) of the affected pending application(s). The appropriate schedule must be completed and attached, and must accurately reflect the amended data.
<i>AU</i>	<i>Administrative Update</i>	If the changes desired are only to administrative data, the Administrative Update (AU) purpose is used instead of "Modification." Administrative Update: To request a change of any administrative data on a license such as Licensee name (without a change in ownership, control or corporate structure), mailing address, telephone and or fax numbers, e-mail address, name of vessel and FAA Registration Number due to FAA change. A fee is not required to make an administrative update.
<i>CA</i>	<i>Cancellation of License</i>	Used to cancel an existing license. (No Fee Required)
<i>DU</i>	<i>Duplicate License</i>	To request a hard copy duplicate of an existing license(s).
<i>EX</i>	<i>Request for Extension of Time</i>	To request additional time to satisfy coverage or construction requirements.
<i>MD</i>	<i>Modification</i>	A modification is used to request a change in the conditions of any data (technical only or administrative and technical) for a license during the term of that license. Item 5 on the Main Form is used to provide the Call Sign/Serial # of the affected station. The appropriate schedule must be completed and attached, and must accurately reflect the data that has been modified. After a license is modified, the FCC will issue a new license, and previous versions of the license will no longer be valid, regardless of the expiration date shown. License terms will not be extended as a result of an application for modification.
<i>NE</i>	<i>New</i>	This code is used for filing initial applications.
<i>NT</i>	<i>Required Notifications</i>	To notify the FCC that, within the required time period, coverage, or construction that requirements have been satisfied or compliance with yearly station construction commitments for licensees with approved extended implementation plans have been met.

<i>RM</i>	<i>Renewal/ Modification</i>	To renew (within the specified renewal time frame, must be filed no later than expiration date of the authorization and no sooner than 90 days prior to expiration date) an existing authorization and to request a change in the conditions for that authorization. Item 5 on the Main Form is used to provide the Call Sign/Serial # of the affected station. The appropriate schedule must be completed and attached, and must accurately describe the data that has been modified.
<i>RO</i>	<i>Renewal Only</i>	To renew an existing authorization within the specified renewal time frame (must be filed no later than expiration date of the authorization and no sooner than 90 days prior to expiration date) where no changes in the conditions are being requested at the time of renewal. (To make any modifications to an existing authorization, the Renewal/Modification purpose should be used.)
<i>WD</i>	<i>Withdrawal of Application</i>	To withdraw a previously filed, currently pending application(s). (No Fee Required)

6. Adjusting Technical Information on Licenses

Licenses contain more than just a frequency assignment. They also contain the allowable number of mobile and portable units, antenna heights, call sign, power limitations and type of emissions. Other technical information on licenses includes Canadian restrictions, control points and FAA tower painting and lighting requirements. Once a radio or radio system has been licensed, any change to the system that adds or moves any control point, changes an antenna location or height, changes transmit frequencies, or moves the transmitting equipment, will require a modification to the radio license. License applications, whether new, renewal, or modification, may take up to 90 days (or longer in some situations) to be returned from the FCC.

D. Automated Termination Process

The ULS has an automated feature that identifies licenses, locations and frequencies that are presumed to have failed to meet construction or coverage requirements resulting in an automatic termination. If the licensee does not file a request for extension of time or a notice of construction in a timely manner, the ULS presumes that the construction or coverage requirement was not met and the system begins an automated termination process.

E. Construction Notices

Most licensees authorized to operate wireless radio services must construct their systems or meet coverage requirements within 12 months after the date their license was granted. This time period is often referred to as the construction, coverage, or build-out deadline. Licensees also need to notify the FCC no more than 15 days after the build-out deadline that the applicable requirements have been met. If a licensee fails to meet its construction requirements by the expiration of its construction period or fails to meet its coverage obligations by the expiration of its coverage period, its authorization terminates automatically via the Automated

Terminal Process described in the previous section. An extension of the construction period may also be requested through Form 601 before the expiration of the construction period. This filing must be made within 15 days of the expiration of the applicable construction period.

The FCC sends "Construction /Coverage Deadline Reminder Notices" to all licensees who have obtained new or modified licenses in the past year. A construction notice stating that a radio system is in use as indicated on the agency's license must be filed on or before the Construction Deadline date, which is located on the FCC Station Authorization (license) in the far right side column. Extensions may be possible in extenuating circumstances; however, acceptable reasons for failing to construct are very limited.

More information on how to file a Notice of Construction or Request for Extension of Time, construction and/or coverage requirements by radio service is available at this web site: http://wireless.fcc.gov/licensing/index.htm?job=const_req_home.

F. Filing a Petition for Reconsideration

If a licensee meets its construction or coverage requirement, but fails to notify the FCC as required, the licensee must file a Petition for Reconsideration (PFR), under the Auto-Term process, within 30 days of the weekly Public Notice, stating that it did meet its build-out requirements. Otherwise, automatic termination of its license, locations or frequencies will take place. The PFR must include the exact date on which the construction was completed or the date on which the coverage requirement was met. A PFR may be filed electronically at <http://wireless.fcc.gov/uls/>.

IX. Types of Interference

Radio-frequency interference, or RFI, is a phenomenon that is likely to occur at some point in any radio communications system. Three types of RFI exist, and they are briefly discussed in this section:

1. Natural Noise
2. Manmade Noise
3. Other Radio Systems

Thunderstorms, static electricity, high winds and even cosmic radiation can cause interference with radio systems. Fortunately, the use of good engineering practices can reduce the effects of Natural RFI. In most cases, a grounded antenna will take care of the problem. Yet another source of interference can originate from human-caused sources such as electrical circuits and motors, power lines or Compact Fluorescent Light (CFLs) bulbs. A third type of interference is caused by radios interfering with each other. Nine RFI classifications describe each type of radio-caused interference, as presented in Table 10 below along with methods for resolving the RFI problem.

Table 10: Types of Radio Frequency Interference with Other Radio Systems and Mitigation Techniques⁵

Type of RFI	Explanation	Mitigation Techniques
Adjacent Channel Interference	Caused by extraneous power from a signal in an adjacent channel spilling over into consecutive frequency bands resulting capacity and performance degradation. Often due to inadequate filtering (such as incomplete filtering of unwanted modulation products in FM systems), improper tuning, or poor frequency control.	Mitigation techniques include moving to the opposite side of the tower, lowering the antenna height, changing CTCSS or DCS codes, lowering power levels, reducing receiver sensitivity, adding attenuators, or a combination of these.
Co-Channel Interference	Crosstalk from two different radio transmitters using the same frequency.	To prevent the problem, avoid applying for a channel that is being used by another licensee in close proximity to you. Mitigation techniques include moving to the opposite side of the tower, lowering the antenna height, changing CTCSS or DCS codes, lowering power levels, reducing receiver sensitivity, adding attenuators, or a combination of these.
Desense or Blocking	Receiver “desense” is interference produced by a close, strong signal that reduces the gain of the amplifying stages of the receiver, thereby inhibiting the ability of the receiver to “hear” the desired signal. Receiver “blocking” occurs when an extremely strong signal blocks out reception of the desired signal.	With modern receiver design, these effects are more infrequent. They can be reduced through frequency separation and geographic distance separation between public safety and commercial operations.

⁵ Derived from *Urgent Communications Magazine*, “The Bane of Your Existence: How to Deal with RF Interference,” February 2011 and “Winning the Battle: What Causes Radio Frequency Interference,” March, 2011 by Ira Wiesenfeld, P.E., and Robert C. Shapiro, P.E.; <http://urgentcomm.com>

Harmonics	All transmitters and some other devices put out harmonics when power is applied. The number of harmonics produced can range from two to 10; the greater the number, the greater the signal distortion.	Good “low-pass” or other filters typically fix problems cause by harmonics.
Image Frequency	An undesired frequency that is exactly 2 f_{IF} above or below the tuned frequency. The mixer does not distinguish between a tuned frequency and an image frequency and it will generate an IF signal from either one.	To attenuate the image frequency, a good filter needs to be employed at the front end of the receiver.
Intermodulation	Occurs when two or more radio frequencies combine to form other frequencies. The interaction (mixing) of two or more different carrier frequencies produces signals at all combinations of the sums and differences of the carrier frequencies.	A variety of protection devices are available to control this type of RFI. ⁶ It is the responsibility of the offending transmitter operator to correct this problem.
Spurious Emission	Occurs when a transmitter broadcasts a signal that is not mathematically related to the channel or the low-level stages in that transmitter.	The most common cause of a spurious emission is a bad connection or oscillation within a low-level stage in a transmitter. Spurious emissions are always FCC violations and must be corrected once it is brought to the attention of the radio system operator or licensee.
Spurious Response	Occurs when a receiver has a good sensitivity to a channel to which it is not supposed to be listening.	Normally the receiver may be re-tuned to the local oscillator to correct this problem.
Transition from Analog to Digital Modulation	Digital transmission systems typically have greater sideband noise emissions than analog systems. The potential exists for digital commercial systems to cause interference to public safety systems that were originally designed to be protected only from analog sideband noise emissions generated by other systems.	Public safety agencies should contact the commercial carrier operating in the affected area to help identify the type and extent of interference and to test mitigation techniques, such as increasing channel separation, modifying power levels, changing antenna heights and/or characteristics and improving propagation and/or strength of transmissions.
Transmitter Noise	All transmitters put out noise on the frequencies close to the operating frequency of the transmitter. A receiver that is within 200 kHz of a transmitter frequency, and in close physical proximity, transmitter noise is probably affecting the receiver signal's minimum threshold.	Distance and special filters usually are used to correct this kind of problem. Sometimes, the receiver needs to be moved away from the transmitter site. The FCC sets strict limits on how much energy can be produced at various frequency spacings away from the assigned carrier frequency; this set of limits is usually represented as a curve and is referred to as “the FCC mask.”

⁶ These include cavity, notch, bandpass/band-reject, cascading, high- and low-pass, pre-selectors and isolator filters.

X. Resolving Interference Problems

Protecting radio signals from interference is of utmost importance to the success of public safety communications systems. A disruption due to interference could mean the difference between life and death.

License holders are responsible for acting appropriately and legally under the conditions and restrictions of their FCC license. Since the FCC does not actively monitor every license holder, it usually gets involved only after a complaint has been filed. Resolution of interference issues is one of the most common FCC complaints. The Commission's rules require private land mobile radio station licensees to take "reasonable precautions to avoid causing harmful interference. This includes monitoring transmitting frequencies for communications in progress and such other measures as may be necessary to minimize the potential for causing interference."

To protect radio communications systems from harmful interference, spectrum users must comply with license requirements and technical rules and regulations. Without effective regulations and enforcement procedures, the integrity of the spectrum management process can be compromised.

A variety of methods can be used to ensure compliance and reduce interference potential. During the license application phase, predictive studies can be completed to anticipate prospective problems. These are normally accomplished by the frequency coordinator, but not all interference can be anticipated in that manner. Spectrum monitoring activities may be undertaken to determine measurements of radio waves and radiation-causing interference to authorized transmitters and receivers. Measurements typically include frequency, power and emission spectrum of a transmitter. A combination of engineering analysis and data obtained from spectrum measurements can be used to resolve problems associated with interference problems. Results of monitoring actual equipment use may also be compared against license conditions. Often simple engineering practices, such as good site grounding, combining systems, or filters, can be employed to reduce interference risks.

PSCB uses several ways to help minimize interference risks, as follows:

- Conducting thorough frequency searches;
- Working closely with frequency coordinators during the licensing process;
- Running independent engineering studies to anticipate interference;
- Encouraging users to follow appropriate best practices for grounding, installation and operation;
- Conducting periodic monitoring of sites/areas prone to interference;
- Communicating license requirements to all prospective users.

If interference is experienced on a PSCB or partner license, PSCB will occasionally investigate to determine the source of the interference and if it can be mitigated.

A. Reporting Misuse of Public Safety Spectrum

To report any interference or misuse of the public safety spectrum, a complaint may be filed with the FCC Enforcement Bureau's (EB) Spectrum Enforcement Division. The EB, in conjunction with FCC Regional and Field Offices, is responsible for responding to interference complaints involving private land mobile radio stations.

To resolve public-safety-related interference complaints, the EB encourages public safety agencies to submit complaints directly to the Association of Public-Safety Communications Officials, Inc. (APCO), one of three FCC-certified Frequency Advisory Committees (FACs) with which it has entered into an agreement to resolve such complaints.

Complaints may be submitted online to APCO at this link: <http://www.apcointl.org/spectrum-management/resources/interference/compliance-request-report.html>.

Based on the information reported, APCO will be able to determine if the source of the complaint is educational, technical, or operational in nature and propose resolutions accordingly. For more information, visit: <http://transition.fcc.gov/eb/apco/fccandap.html>.

XI. State of Montana FCC Licenses

A. Overview of License Management

DOA has primary legislated authority for spectrum planning and management for the State of Montana. The first portion of this section on State of Montana FCC Licenses describes licenses managed by DOA not only in support of the Montana Mutual Aid Frequency System and the statewide public safety communications system, but also on behalf of a variety of state agencies. The second portion of this section describes other State of Montana agencies that manage their own spectrum for the primary purpose of public safety. The third portion of this section concludes with a description of spectrum managed by state agencies whose purpose is primarily non-public safety related. Table 11 provides a list of FRN numbers managed by DOA.

Table 11: FRN Numbers Managed by DOA

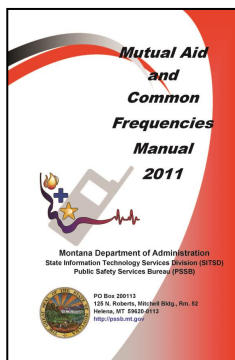
FRN	State Agency License Name	Appendix	Radio Service Code(s)
0001643626	Montana, State of (PSSB)	A	IG, MW, PA, PC, PW, SL, YW
0004535803	Montana Statewide System - PSSB	B	PW, MW, YW

Complete lists of all frequency call signs covered by these FRNs are provided in Appendices A, B, C and D. Trunking and microwave spectrum for the statewide public safety communications system is managed under FRN 0004535803, while the Montana Mutual Aid frequencies are managed under FRN 0001643626.

B. Mutual Aid and Common Frequencies Managed by DOA

1. Montana Mutual Aid Frequency System

First responders from different agencies, jurisdictions and disciplines use mutual aid frequencies to communicate during incidents and disasters where neighboring responders are needed for mutual aid assistance. In support of the Montana Mutual Aid System, the department licenses 7 general use frequencies, 3 law enforcement frequencies, 9 fire frequencies and 3 EMS mutual aid frequencies.



DOA has well-established management and oversight procedures for the Montana Mutual Aid frequency program. These Standard Operating Procedures (SOPs) are outlined in the Mutual Aid and Common Frequency Manual, 2011 Edition, which is available at this link: http://pssb.mt.gov/mutual_aid_manual.mcp.x. All users are also subject to FCC regulations. The *Montana Mutual Aid and Common Frequencies Manual* contains spectrum utilization plans for all mutual aid frequencies used in the State of Montana. It also contains policies, procedures and practical applications for using VHF-high band frequencies for mutual aid and common use.

The State of Montana holds statewide licenses for mutual aid frequencies, and then provides permission for various public safety and approved public and private entities, such as the Red Cross or tow truck operators, to use the frequencies via a permit. Permits may be requested using the state's Mutual Aid Frequencies Online Permit Request Service located at this link: <https://app.mt.gov/mutualaid/>.



The service allows applicants to request a new permit; view, print or modify an existing one; or view or print an approved permit. Each applicant must provide an e-mail address, which will be used to notify the agency of action taken on the permit request. Access applications may be submitted electronically using this online request service. PSCB issues access agreements, coordinates policy and addresses abuse problems. Remember, permission to use Montana Mutual Aid Frequencies requires an approved Mutual Aid and Common Frequencies Permit.

The following four tables provide specific information on Montana's Mutual Aid frequencies.

Table 12: Montana Mutual Aid General Use Frequencies

Frequency (MHz)	Color Name & National Designator	Usage	Restrictions/ Notes
153.9050	GOLD	General Mutual Aid and Coordination	
155.3400	TAN (VMED28)	Primary Use: State Air-to-Ground Coordination Secondary Uses: Hospital-to-Ambulance or EMS interagency communications at incident scene.	10-Watt Airborne Limit restricted to under 5280 feet
157.4250	NEON	General Mutual Aid and Coordination	<ul style="list-style-type: none"> • 10-Watt Airborne Limit restricted to under 5280 feet • Narrowband Only (11K2F3E) • 40-Watt mobile limit • Use above Line A requires special FCC approval through the Dept. of Administration • Not available within 120 Km of Coultts, AB, including the following jurisdictions: Glacier Co., Toole Co., Liberty Co., Pondera Co., Blackfeet Reservation. • Not available in: Roosevelt Co., Valley Co., McCone Co., Daniels Co., Richland Co., Fort Peck Reservation.
154.4525	CHARLIE	General Purpose Interoperability Channels for all law enforcement, fire, EMS and medical agencies including local, state, tribal and federal users. Approval pending review of agency communications plan and evaluation of non-interference with existing users. Requires use of CTCSS tone 156.7 Hz.	<ul style="list-style-type: none"> • Narrowband Only • Not available for mutual aid use in the following counties: Broadwater, Cascade, Daniels, Flathead, Jefferson, Lake, Lewis and Clark, Lincoln, Meagher, Powell, Roosevelt, Sanders and Sheridan
155.7525	DELTA		<ul style="list-style-type: none"> • Narrowband Only • Not available for mutual aid use in the following counties: Granite, Lake, Mineral, Missoula, Powell, Ravalli and Sanders

158.7375	ECHO	General Purpose Interoperability Channels for all law enforcement, fire, EMS and medical agencies including local, state, tribal and federal users. Approval pending review of agency communications plan and evaluation of non-interference with existing users. Requires use of CTCSS tone 156.7 Hz.	<ul style="list-style-type: none"> • Narrowband Only • Not available for mutual aid use in the following counties: Blaine, Cascade, Chouteau, Daniels, Fergus, Flathead, Glacier, Granite, Hill, Judith Basin, Lake, Liberty, Lincoln, McCone, Mineral, Missoula, Petroleum, Phillips, Pondera, Powell, Ravalli, Roosevelt, Sanders, Sheridan, Toole and Valley
159.4725	FOX		<ul style="list-style-type: none"> • Narrowband Only • Not available for mutual aid use in the following counties: Chouteau, Daniels, Flathead, Glacier, Hill, Lake, Liberty, Lincoln, McCone, Pondera, Roosevelt, Sanders, Sheridan, Toole and Valley

Table 13: Montana Mutual Aid Law Enforcement Frequencies

Frequency (MHz)	Color Name & National Designator	Usage	Restrictions/ Notes
155.4750	BLUE (VLAW31)	National Law Enforcement Emergency	<ul style="list-style-type: none"> • Secondary status to Canadian RCMP stations along the border • Requirement for receiver tone control (156.7 Hz) effective Oct. 1, 2012
155.7900	SILVER	Law Enforcement Mutual Aid	Requirement for receiver tone control (156.7 Hz) effective Oct. 1, 2012
153.8000	BLACK	Law Enforcement Tactical	<ul style="list-style-type: none"> • Approved digital and encrypted use with regional SOP • Requirement for receiver tone control (156.7 Hz) effective Oct. 1, 2012 • Not to be used within 75 miles of the BLAIRMORE, HILLCREST & WARNER, ALBERTA areas per FCC license

Table 14: Border Interoperability Frequency

Frequency (MHz)	Color Name & National Designator	Usage	Restrictions/ Notes
155.4750	BLUE (VLAW31)	General purpose interoperability channel for all law enforcement, fire, EMS and medical agencies including local, state, tribal, federal and Canadian users.	May only be used within 16 km (10 mi) of the US-Canadian border.

Table 15: Montana Mutual Aid Fire Frequencies

Frequency (MHz)	Color Name & National Designator	Usage	Restrictions/ Notes
153.8300	RUBY	State Fire Repeater	
154.0700	RED	State Fire Mutual Aid	Not to be used within 75 miles of Bow Island, Alberta per FCC license
154.2800	MAROON (VFIRE21)	State Command and Control	
154.2650	CORAL (VFIRE22)	State Fire Ground #1	
154.2950	SCARLET (VFIRE23)	State Fire Ground #2	
154.2725	COPPER (VFIRE24)	State Fire Ground #3	<ul style="list-style-type: none"> Maximum mobile power is 100 watts ERP Narrowband Only Secondary to adjacent 7.5kHz licensed channels Special permission required for use here applicable
154.2875	BURGUNDY (VFIRE25)	State Fire Ground #4	<ul style="list-style-type: none"> Narrowband Only Secondary to adjacent 7.5kHz licensed channels where applicable Special permission required for use
154.3025	CRIMSON (VFIRE26)	State Fire Ground #5	<ul style="list-style-type: none"> Narrowband Only Secondary to adjacent 7.5kHz licensed channels where applicable Special permission required for use
159.3450	GARNET	State Fire Repeater Control	
172.2250	ALPHA	Interagency Fire Use Only	<ul style="list-style-type: none"> 15-Watt Limit Narrowband Only
172.3750	BRAVO	Interagency Fire Use Only	<ul style="list-style-type: none"> 15-Watt Limit Narrowband Only

Table 16: Montana Mutual Aid EMS Frequencies

Frequency (MHz)	Color Name & National Designator	Usage	Restrictions/ Notes
155.2800	WHITE	State Local Hospital-to-Ambulance	
155.3400	TAN (VMED28)	Primary Use: State Air-to-Ground Coordination Secondary Uses: EMS communications and medical staging at an incident scene.	10-Watt Airborne Limit restricted to under 5280 feet
155.3250	GRAY	Primary Use: Central Region Dispatch & Paging Secondary Use: On-scene incident management per SOP (Treatment Group)	May not be used within 75 miles of Fort MacLeod, Alberta

155.3850	PINK	Primary Use: Western/Eastern Region Dispatch & Paging Secondary Use: On-scene incident management per SOP (<i>Transport Group</i>)	
157.4250	NEON	General Mutual Aid and Coordination Note: EMS Priority during mass-casualty incidents. On-scene incident management per SOP (<i>Triage Group</i>)	<ul style="list-style-type: none"> • 40-Watt mobile limit • Use above Line A requires special FCC approval through the Dept. of Administration • Narrowband Only • Not available within 120 Km of Coultts, AB, including the following jurisdictions: Glacier Co., Toole Co., Liberty Co., Pondera Co., Blackfeet Reservation. • Not available in: Roosevelt Co., Valley Co., McCone Co., Daniels Co., Richland Co., Fort Peck Reservation.

2. Montana Common Frequencies

Search and Rescue (SAR) groups in Montana use the **VIOLET** or **PURPLE** common frequency channels listed in Table 16.

Table 17: Montana Common Frequencies

Frequency (MHz)	Color Name & National Designator	Usage	Restrictions/ Notes
155.1600	VIOLET (SARNFM)	National Search and Rescue	SAR Coordination Only
155.2200	PURPLE	State Search and Rescue	SAR Coordination Only

The **VIOLET** and **PURPLE** common frequencies are licensed statewide under call sign WQOB614. They are either licensed by the user or accessed by agreement with a licensee specifically for communications with that licensee. In other words, users must either be licensed for the common frequency or have an agreement from the license holder that authorizes communications on the frequency with that license holder.

These two frequencies are primarily licensed by SAR agencies at the local county or tribal level; however, some are held by School Districts for mobile use by school bus drivers. DOA also holds one Mutual Aid **PURPLE** license for Lewis and Clark County.

C. Other Public Safety Spectrum Managed by DOA

DOA also manages spectrum under FRN 0001643626 for a variety of other state agencies and local entities for public safety purposes, as described below.

1. Department of Public Health and Human Services (DPHHS)

DOA licenses the EMS Mutual Aid frequencies on behalf of the Department of Public Health and Human Services (DPHHS), which primarily would only use radio communications during significant disasters and events where it would play a critical

coordination role for health and Emergency Medical Services (EMS). Such a role would require the ability to communicate statewide with EMS, community health offices, hospitals, first responders, Disaster & Emergency Services (DES), and/or the Montana National Guard.

The EMS & Trauma Systems Section of DPHHS is responsible for the licensing and regulation of pre-hospital Emergency Medical Services including ground ambulance services, air ambulance services (fixed wing and rotor wing), and non-transporting medical units. All licensed EMS Services are eligible to apply for permits to use the EMS Mutual Aid frequencies shown in Table 15. Administrative Rules of Montana (Chapter 37.104.201) provide specific communications equipment and frequency requirements for ground and air ambulance services as well as non-transporting medical units. Individual hospitals also may license base stations at their hospital or clinic sites.

2. Department of Corrections

The Department of Corrections provides programs and services for about 13,000 adult males and females in prisons; in treatment, sanction or assessment programs; in pre-release centers, or on probation, parole or intensive supervision programs. Montana has six state-run facilities located in Billings, Boulder, Deer Lodge, Great Falls and Miles City. In addition, 18 other programs provide services under contract with the State of Montana at these locations: Anaconda, Bozeman, Butte, Glendive, Helena, Lewistown, Missoula, Shelby and Warm Springs. When offenders are escorted and/or transported to facilities, certain operational procedures must be followed, including a requirement that all vehicles be equipped with two-way radio communications.

The bulk of the Department of Corrections' spectrum licenses are licensed and managed by The Department of Transportation. However, DOA manages four public safety frequencies for operations and security at the Women's Prison in Billings, a frequency for the Riverside Youth Correctional Facility in Boulder and an Industrial/Business license for the self-supporting ranch at the Men's Prison in Powell County that uses commercial activities to train prisoners.

3. General Services Division (GSD)

The General Services Division (GSD), part of DOA, uses portable and desk set radios for day-to-day operations as well as for response to any emergency or disaster incident within the State of Montana's Capitol Complex in Helena. GSD has developed a radio system that is incorporated within the local communications plan. This system gives GSD the ability to communicate with a variety of local responders, including the Montana Highway Patrol Dignitary Protection Detail; the Helena Police Department; local fire departments; and the Lewis and Clark County Sheriff's Office, Public Works and Emergency Medical Services. DOA maintains a license for the frequency 155.1300, which is used by GSD. This license is maintained under DOA's FRN 0001643626, Call Sign WNCH471. In addition, DOA maintains a license for a video mesh around the Capitol Complex.

4. Montana University System

DOA manages an assortment of public safety spectrum licenses on behalf of the Montana State University (MSU) in Bozeman, MSU-Billings, MSU-Great Falls and the University of Montana in Helena, now known as Helena College. These licenses are mainly for the purposes of campus operations and maintenance.

5. Public Safety Answering Points

FCC regulations require that High Frequency (HF) (between 3 - 30 MHz) licenses for emergency communications between interstate Public Safety Answering Points (PSAPs) be held by a state agency. These licenses provide standby and/or backup communications circuits in emergency and/or disaster situations where regular domestic communications circuits have been disrupted. Hence, DOA manages HF licenses on behalf of eight Montana PSAPs and other emergency management centers.

6. Statewide Public Safety Communications System

DOA holds licenses and manages most of the trunking and microwave frequencies on behalf of the statewide public safety communications system, under FRN 0004535803. These frequencies are provided in Appendix B. Current status maps of the statewide microwave and trunked systems are available at these links:

- [Microwave Status Map](#)
- [Trunked Status Map](#)

In addition to these DOA-managed trunking and microwave frequencies, a number of sites throughout the state's P25 trunked radio system also utilize frequencies managed by local or federal agencies. These P25 conventional repeater resources may be used as a typical conventional analog/digital asset, or be patched into trunking talk groups by a regional dispatch center. A list of these conventional repeaters appears on page 21 in Appendix E.

D. Frequencies Managed by State Agencies for the Primary Purpose of Public Safety

A number of state agencies license significant numbers of frequencies for public safety purposes; hence, they have their own FRNs and manage their own licenses with the FCC. In a few cases, state agencies other than DOA manage frequencies on behalf of other state agencies. Specific instances of such cases are documented in this section. Table 17 contains a list of FRNs that are managed by state agencies primarily for the purpose of public safety.

Table 18: FRN Numbers Managed by State Agencies for the Primary Purpose of Public Safety

FRN Number	State Agency License Name	Radio Service
0004256244	DNRC State of Montana	PW, IG
0004256251	Montana Department of Transportation and on behalf of the Department of Corrections; Fish, Wildlife and Parks; and Livestock	MW, PW
0007635873	Montana, State of (Criminal Investigation Bureau)	PW
0004535787	Montana, State of (Dept of Justice Mt Hwy Patrol Div)	PW, MW
0004948923	Montana, State of (MHP)	MW
0001648070	Montana, State of (Disaster & Emergency Svcs Div)	PW
0005772512	Montana, State of (Fish, Wildlife & Parks)	PW
0018669358	Montana, State of (Legislative Branch)	PW

1. Department of Natural Resources and Conservation (DNRC)

The Department of Natural Resources and Conservation (DNRC) radio communications system is designed primarily for fire detection and suppression. DNRC coordinates and fights fire in remote, rugged areas where radio coverage is a primary issue. Firefighting activities are dangerous by their very nature. Loss of communications because of inadequate radio coverage or poor equipment not only increases the threat to personnel deployed to a site, but it also is a direct endangerment of the lives of DNRC fire fighters as well as those of other local, state, tribal and federal agencies participating on a site.

DNRC holds more than 50 spectrum licenses across the State of Montana. During an incident, a combination of U.S. Forest Service, DNRC and Mutual Aid frequencies are used. Both U.S. Forest Service and DNRC radio communications are dispatched via the Helena Interagency Dispatch Center, which serves as a focal point for coordinating the mobilization of resources for wildland fire and other incidents in DNRC's Central Land Office/Helena area. Its website is: <http://gacc.nifc.gov/nrcc/dc/mthdc/index.htm>. DNRC has a single FRN: 0004256244. Its spectrum is primarily managed by:

Sean Gallagher, Communications Technologist
Dept. of Natural Resources and Conservation
Equipment Development and Communications Section
2705 Spurgin Road
Missoula, MT 59804
(406) 542-4213
sgallagher@mt.gov

2. Department of Fish, Wildlife and Parks

Wardens that perform law enforcement duties are the primary users of the department's radio communications equipment. They communicate with a broad spectrum of local, state, tribal and federal agency representatives, particularly law enforcement. FWP staff work and patrol in remote locations and coverage is a significant challenge. Much of their work occurs in the field, away from vehicle-mounted mobile radios, and their primary communications tool in those instances is a portable radio. With the proliferation of cell phones, many field personnel also use them in conjunction with or in place of radio communications.

FWP enforcement staff members are dependent upon local dispatchers (local sheriff offices as well as the MHP). A signed Memorandum of Understanding between FWP and MHP allows MHP to dispatch for FWP. FWP licenses more than 10 frequencies around the state for use by law enforcement wardens. FWP does not have other radio communications assets, such as towers or repeaters. FWP has traditionally relied upon MHP and/or DOT for its communications support and direction. Even though FWP has its own FRN (#0005772512), at the time of this plan's publication, two frequencies had been licensed on behalf of FWP under DRNC's FRN and the Department of Transportation's FRN.

FWP frequencies are managed by:

Mike Korn, Assistant Enforcement Chief
Fish Wildlife & Parks
1420 East Sixth Avenue
P.O. Box 200701
Helena, MT 59620
(406) 444-2456
mkorn@mt.gov

3. Department of Justice

Montana's Attorney General is the state's chief lawyer and law enforcement officer and leader of the Montana Department of Justice (DOJ). The department includes agencies such as the Montana Highway Patrol, the Montana Law Enforcement Academy (MLEA), the Gambling Control Division, and the Division of Criminal Investigation (DCI). All of these agencies rely on communications to help fulfill their mission of promoting public safety. The Montana Highway Patrol (MHP) has the largest number of radio users in DOJ. MHP's Communications Section supports DOJ's radio infrastructure and maintenance as well as the statewide public safety communications system.

MHP has repeaters located throughout the state and provides dispatch services from its Communications Center located at Fort Harrison in Helena. MHP not only dispatches for DOJ, but also provides dispatching services for other state agencies, such as Corrections, Transportation, and Fish, Wildlife and Parks either on an as-needed basis or through a Memoranda of Understanding (MOU). In addition, the dispatch center handles calls for service from tribal and federal agencies.

The department has more than 65 licensed frequencies and maintains a variety of agreements to use local law enforcement spectrum statewide. Additionally, all MHP units have full access to the statewide Mutual Aid and Common Frequencies channels. P25 trunking radios are used throughout the state as well as Mobile Data Terminals with wireless data cards to be able to share a range of criminal justice information across jurisdictional boundaries. MHP owns, maintains and is co-located on nearly 75 communications sites that are part of the statewide public safety communications system.

The Division of Criminal Investigation has its own FRN: 0007635873. The Montana Highway Patrol manages FRN 0004948923 for its microwave (MW) licenses, while FRN 0004535787 is used primarily to manage public safety pool (PW) spectrum licenses, but some microwave licenses also are licensed under this FRN.

DOJ spectrum is managed by:

Dale Osborne, Lead Communications Technician
Montana Highway Patrol
2550 Prospect Ave.
Helena, MT 59620
(406) 444-4274
(406) 437-2514 (Cell)
dosborne@mt.gov

4. Department of Military Affairs

The Department of Military Affairs serves Montana citizens by providing support during times of natural disaster or emergency. It oversees all activities of the Army and Air National Guard and the Disaster and Emergency Services Division. It also provides administrative support for the Veteran's Affairs Division. The department manages a joint federal-state program that keeps in readiness trained and equipped military organizations for the Governor in the event of a state emergency and the President in the event of a national emergency.

a. Montana National Guard

The Montana National Guard operates and supports radio communications for its command and control functions. Radio operations can occur anywhere in the state;

both portable and mobile radios are used. The Montana Guard uses a range of frequencies and has also programmed the Montana Mutual Aid frequencies in its radios.

The Guard's Joint Operations Center has four operational systems that are capable of cross-banding radio communications and can provide satellite, IP service and streaming video. The Center also has a cache of radios that can operate at UHF, VHF (both analog and trunked), and at 800 MHz frequencies.

Federal agencies manage and license spectrum on behalf of the Montana Guard. Spectrum use by federal government agencies is coordinated by the National Telecommunication and Information Administration (NTIA).

b. Disaster and Emergency Services (DES)

The Disaster and Emergency Services (DES) Division plays a critical role in Montana's emergency response efforts. In times of emergencies, the preservation of life and property depends on a swift and coordinated response of both personnel and resources. The ability to communicate is a key factor in these response efforts.

DES manages its 30 spectrum licenses under FRN 0001648070. To meet emergency response needs, a statewide common frequency was created for interagency direction and control communications. It is named the DES Direction and Control Frequency and is referred to as the **BROWN** channel. The frequency is 155.8200 MHz and is established exclusively for these purposes:

- Emergency management communications by elected or appointed officials of the executive branch of government, emergency response agency department heads and supervisors, and other department heads who have specific emergency assignments.
- Communications which are essential for direction and control needs during a disaster or emergency situation.
- Extended incident coordination between the Incident Commander, command staff, EOC and high-level command/local government operations.

DES is also eligible to license the **BROWN** frequency for fixed mobile relay use to support operation of the State Emergency Operations Center. The frequency 153.9650 MHz is reserved statewide as the input frequency for this fixed mobile relay use as well as for future expansion of DES communications. The **BROWN** channel is available for mobile and/or base licensure directly with the FCC.

DES has acquired state-of-the-art communications technology to enhance its emergency response effectiveness. This technology includes mobile radios, a cache of portable radios, tactical repeaters and interoperable equipment. These assets are intended for statewide use during emergencies, disasters, and/or incidents for the purpose of supporting local, tribal and other state agencies as well as federal entities. This equipment permits interoperability through VOIP, ROIP, satellite, landlines and cell phones as well as simplex and duplex radio systems that re-transmit signals.

In addition, DES maintains a cache of handheld radios in Helena for use on a check-in/check-out basis for any state agency personnel needing portable radio communications while assigned to the State Emergency Coordination Center during an emergency.

DES frequencies are managed by:

Mike Stapp, Chief
Planning Bureau
Montana DES
P.O. Box 4789
Fort Harrison, MT 59636
(406) 324-4786
(406) 980-1296 (Cell)
MStapp@mt.gov

5. Department of Transportation (DOT)

The Helena Communications Bureau of the Montana Department of Transportation (DOT) coordinates all engineering, installation and maintenance for land mobile communications systems in the state. This includes all portable and mobile radios, base stations and repeaters and communications tower sites.

DOT licenses more than 50 VHF frequencies under FRN 0004256251 for use throughout the state. The Department's communications system is used on a day-to-day basis by hundreds of employees in Maintenance, Construction and Motor Carrier Services. The system is comprised of 11 primary dispatch locations in DOT's five District and six Area Offices as well as its headquarters in Helena.

Transportation personnel routinely monitor, transmit and receive information over multiple radio transmissions to detect emergencies, exchange information and provide emergency support services to the public and to law enforcement agencies. The mobile data portion of DOT's system is used primarily to track commercial carriers.

DOT spectrum is managed by:

Steve Keller, Chief
Communications Bureau
Montana Department of Transportation
2701 Prospect Avenue
PO Box 201001
Helena, MT 59620
(406) 444-6305
stkeller@mt.gov

DOT also has licensed a number of frequencies on behalf of the Departments of Corrections; Fish, Wildlife and Parks; and Livestock, as follows:

a. Department of Corrections

The Department of Transportation licenses more than 20 different frequencies on behalf of the Department of Corrections. For questions about the department's communications operations, contact:

David Vaught, Emergency Preparedness Planning Manager
Montana Department of Corrections
5 South Last Chance Gulch
Helena, MT 59620-1301
Fax: 406-444-4551
Office: 406-444-0354
dvaught@mt.gov

b. Department of Fish, Wildlife and Parks

As previously mentioned, FWP has its own FRN (0005772512); however, the Department of Transportation has licensed one frequency on behalf of FWP (Call Sign WNVK227).

c. Department of Livestock

Mobile radios are used by the Brands Enforcement Division's inspectors who are located throughout the state. Inspectors need to talk to local law enforcement in the various jurisdictions within their regions as well as other inspectors in nearby regions. The Helena Brands Enforcement Office also maintains a small cache of portable radios that maybe checked-out on an as-needed basis. In addition, the Brands Enforcement Division has administrative responsibility for mobile radios used by the Director, Chief Investigator, the Veterinarian's office, and the Meat and Poultry Inspector, all of whom have statewide communications needs.

The Department of Livestock does not have its own FRN number. Historically, its frequencies have been managed by DOA (153.9050 and 155.7900 MHz; Call Sign: WNXN970). However, they are now being managed under the Department of Transportation's FRN 0004256251. The Department of Livestock also is listed as a licensee on the **GOLD** and **SILVER** Mutual Aid frequencies. For questions about the department's communications operations, contact:

John Grainger, Administrator
Brands Enforcement Division
Department of Livestock
PO Box 202001
301 N. Roberts
Helena, MT 59620-2001
(406) 444-2045
jgrainger@mt.gov

6. Legislative Services

The Legislative Services Division (LSD) is part of the Legislative Branch of government which provides services for the Montana Legislature as assigned by law or as directed or requested by Legislators or Legislative Committees. Legislative Services has two frequencies licensed under FRN 0018669358 used for security purposes in the Capitol Complex. Legislative Services frequencies are managed by:

Lenore Adams, Facilities Coordinator
Legislative Services
State Capitol, Room 154
1301 East Sixth Ave.
P.O. Box 201706
Helena, MT 59620-1706
(406) 444-4456
leadams@mt.gov

E. Frequencies Managed by State Agencies Primarily for Non-Public Safety Use

More than 30 FRNs are held by multiple state agencies primarily for non-public safety use. These are listed in Table 18 below. Descriptions of the state agencies that manage these licenses follow.

Table 19: FRN Numbers Managed by State Agencies Primarily for Non-Public Safety Use

FRN Number	State Agency License Name	Radio Service Code(s)
0009620220	Montana Chemical Dependency Center	IG
0007337439	Montana Correctional Enterprises	IG
0013932702	Montana State Hospital (Warm Springs)	IG
0015099534	State of Montana (Traveler's Info Station) - Pishkin State Park, Ulm	PW
0007148174	Montana State University, Visual Communication Building	TI, TS, ED & MG ⁷
0010021079	Montana State University, Campus Stores	IG
0010332542	Montana State University, Museum of the Rockies	IG
0012149373	Montana State University Auxiliaries, Hedges Residence Hall Complex	PW
0016905978	Montana State University, Civil Engineering Dept. (GPS/RTK Training)	IG
0016380735	Montana State University, Spatial Sciences Center (GPS/RTK Training)	IG
0008693905	Montana State University, Physical Plant Maintenance, Strand Union Bldg.	IG
0001624345	Montana State University - Police Dept.	PW, IG
0017758673	Montana State University - Billings	IG
0014681035	Montana State University - Montana Cooperative Fishery Research Unit	IG
0005770292	Montana Tech of the University of MT	IG
0021559786	Montana Tech of the University of MT	NN ⁸
0010336444	Montana Tech of the University of MT	MW
0001624527	University of Montana	AS ⁹ , IG, PW, MG, TS ¹⁰
0006875132	University of Montana, Athletic Complex and Intercollegiate Athletics	LP ¹¹ , IG
0013135082	University of Montana, Dept. of Geology (GPS/RTK Training)	IG
0014888184	University of Montana, University Villages, Bradley Hall	IG
0016582124	University of Montana, Golf Course	IG

⁷ TI=TV Intercity Relay; TS = TV Studio Transmitter; ED=Educational Broadband; MG=Microwave Industrial/Business Pool

⁸ NN=3650-3700 MHz Wireless Broadband

⁹ AS=Aural Studio Transmitter Link

¹⁰ TS=TV Studio Transmitter Link

¹¹ LP=Broadcast Auxiliary Low Power

0019034644	University of Montana, College of Forestry & Conservation (GPS/RTK Training)	IG
0001624550	University of Montana - Western (Maintenance)	PW
0018338814	University of Montana - Western	IG

1. Montana Chemical Dependency Center

The Montana Chemical Dependency Center in Butte is an in-patient chemical dependency treatment center administered by the Addictive and Mental Disorders Division of the Department of Public Health and Human Services (DPHHS). It manages one IG frequency.

2. Montana Correctional Enterprises

Montana Correctional Enterprises (MCE) is responsible for one industrial/business frequency. MCE provides vocational education and real-life work experience through numerous inmate training programs.

3. Montana State Hospital

The Montana State Hospital in Warm Springs, which is administered by the Addictive and Mental Disorders Division of DPHHS, also holds one industrial/business frequency. The Montana State Hospital provides inpatient psychiatric treatment for adults with serious mental illness.

4. State of Montana (Traveler's Info Station)

An FRN has been issued under the State of Montana's name for the Traveler's Info Station at the Pishkun State Park in Ulm. This registration is for one frequency in the public safety pool.

5. Montana University System

a. Montana State University

The Montana State University (MSU) in Bozeman has been issued 10 different FRNs for a variety of purposes, including television and radio broadcasting, GPS/RTK training, residence hall and museum security and operations, physical plant maintenance and operations and the police department.

b. Montana State University - Billings

MSU-Billings has a single industrial/business license in the industrial/business pool.

c. Montana Tech of the University of MT

Montana Tech has three different FRNs from the industrial/business, wireless broadband (NN) and microwave pools.

d. University of Montana

The University of Montana (UM) in Missoula holds seven different FRNs. The FRN 0001624527 refers to the bulk of UM licenses, which are for the purposes of television and radio broadcasting, Broadcast Media Center; physical plant maintenance and safety and operations. This FRN also covers two licenses that are used at Montana Tech in Butte and Western in Dillon. The University of Montana has been issued several other FRNs that refer to licenses that are managed for the purposes of athletic

complex communications, campus security, GPS/RTK training, golf course communications, and residence hall security and operations.

e. *University of Montana - Western*

University of Montana - Western has two different FRN registrations for physical plant maintenance and business-related activities.

XII. LMR Public Safety Spectrum Utilization Planning & Coordination Document Implementation and Future Modifications

Implementation of the activities in this document should be useful in ensuring that Montana's public safety agencies successfully manage their spectrum licenses, have access to information about spectrum resources, and gain a broad awareness of emerging issues related to spectrum management and utilization. DOA staff and representatives will implement effective communication outreach practices to ensure transparency, share knowledge and promote a collaborative approach with stakeholders. Targeted communication and outreach efforts will result in more engagement, more participation, and better opportunities to exchange information about jurisdiction needs and resources. Likewise, implementation ensures compliance with MCA 2-17-541 et seq. DOA has primary responsibility for developing and implementing this planning document.

Modifications may be needed when responding to new demands on statewide radio spectrum. These can originate in several ways, such as requests for new radio services, introduction of new technologies, changes in international spectrum allocations or use of the spectrum, or simply because of spectrum congestion in an existing band when demand exceeds supply. Other events such as a change in statute, key staff changes or a specific request for a change may also initiate a modification to this document.

Recognizing that stakeholder participation is invaluable, DOA intends to charge the Frequency Advisory Subcommittee—once it is formally convened—with the task of making suggestions and implementing changes to this planning document. Such changes will be posted on a website and public comments will be solicited. After a 45-day review period, modifications will be incorporated into the Land Mobile Radio Public Safety Spectrum Utilization Planning and Coordination Program document.

XIII. Administrative Record of Changes Log

Publication Date:	Sept. 20, 2013
Change and Review Contact:	Elizabeth Wing Spooner espooner@mt.gov 406-444-2491

This Land Mobile Radio Public Safety Spectrum Utilization Planning and Coordination document is subject to ongoing information updates and modifications. The use of the “Record of Changes Log” helps to detail and manage document modifications throughout its life. All attempts have been made to ensure the accuracy of information within this document as of its initial publication date.

Record of Changes Log			
Change No.	Description	Change Date	Recommended By

XIV. Links

- A. Mutual Aid and Common Frequencies Manual, 2011 Edition
http://pssb.mt.gov/mutual_aid_manual.mcpx
- B. Region 25 700 MHz Plan
http://pssb.mt.gov/700_mhz_plan.mcpx
- C. Region 25 800 MHz Plan
http://pssb.mt.gov/content/docs/Region_25_800_MHz_Plan_web.pdf
- D. 47 CFR Part 90 Regulations
<http://www.gpo.gov/fdsys/pkg/CFR-2010-title47-vol1/content-detail.html>
- E. Glossary of Radio Definitions and Acronyms
http://interop.mt.gov/content/docs/imtc/Radio_Definitions_and_Acronyms.xls

XV. List of Appendices and Annex

Appendix A. VPC Marine Channel Approved Use Plan

Appendix B. DOA-Managed Licenses under FRN 0004535803

Appendix C. DOA-Managed Licenses under FRN 0001643626

Appendix D. Montana Mutual Aid and Common Frequency Manual

Annex. Spectrum Utilization Planning & Coordination Work Plan for Achieving Goals and Objectives

Appendix A: VPC Marine Channel Approved Use Plan¹²

Frequencies	Channel	Site Name, County and FCC Call Sign							
		Northern Tier (West of the Divide)	Northern Tier (East of the Divide)	Lewis and Clark System	Gallatin County System	Central Montana	Eastern Montana	West/SW Montana	Billings Region
FCC Call Sign:		WPOJ516	WQAV770	WPOJ515	WQAV770	WPOJ515/WQAV770	WQAV770	WPOJ516	WQAV770
161.8000/ 157.2000	424	Blue Mt. (Lincoln Co.)	Gideon (Valley Co.)	Belmont Mt.	Kenyon Water Tank	Judith Peak (Fergus Co.)	1. Government Hill (Custer Co.) 2. Downtown Sidney (Richland Co.)		Billings Downtown
161.8125/ 157.2125	224	Blacktail Mt. (Flathead Co.)	Plentywood (Sheridan Co.)	Law Enforcement Center	Gallatin 9-1-1	Flying J (Cascade Co.)	Fallon Site (Dawson Co.)		
161.8250/ 157.2250	484	Marion Mt. (Flathead Co.)	Divide Mt. (Blackfeet Tribe)	Hogback Mt.			Fox Creek Site (Dawson Co.)		
161.8625/ 157.2625	225	King Mt. (Lincoln Co.)			Gallatin 9-1-1	Sullivan Mt. (Cascade Co.)	Fallon Site (Dawson Co.)		Billings Downtown
161.8750/ 157.2750	485	Blacktail Mt. (Flathead Co.)	Plentywood (Sheridan Co.)	Law Enforcement Center	Nixon Ridge		1. Government Hill (Custer Co.) 2. Downtown Sidney (Richland Co.)		
161.8875/ 157.2875	285	Marion Mt. (Flathead Co.)	Opheim (Valley Co.)	Hogback Mt.			Sidney Downtown (Richland Co.)		Billings Downtown
161.9000/ 157.3000	426	Blue Mt. (Lincoln Co.)	Divide Mt. (Blackfeet Tribe)	Hogback Mt.			N. Forsyth (Rosebud Co.)		Greeno
161.9125/ 157.3125	226		Gideon (Valley Co.)		Kenyon Water Tank	Highwood Baldy (Judith Basin Co.)	Makoshika (Dawson Co.)		Billings Downtown
161.9250/ 157.3250	486	Jette Mt. (Flathead Res.)	Scobey (Daniels Co.)	Sunset Mt.			Sidney Downtown (Richland Co.)		Wolf Mt. (Crow Reservation)
161.9375/ 157.3375	286	Marion Mt. (Flathead Co.)	Windy Hill (Roosevelt Co.)				Makoshika (Dawson Co.)	Bull Mountain (Jefferson Co.)	Billings Downtown
161.9500/ 157.3500	427	Marion Mt. (Flathead Co.)	1. Mt. Royal (Liberty Co.) 2. Culbertson (Roosevelt Co.)	Hogback Mt.			Fox Creek Site (Richland Co.)		
162.0000/ 157.4000	428	Blue Mt. (Lincoln Co.)		Belmont Mt.			Government Hill (Custer Co.)		
157.4125	228R	1. King Mt. (Lincoln Co.) 2. Veterans Home (Columbia Falls)				Judith Peak Input (Fergus Co.)	Northern Cheyenne Tactical	Deer Lodge Prison (Powell Co.)	
157.4250	488R	Statewide Mutual Aid	Windy Hill (Roosevelt Co.)	Statewide Mutual Aid	Statewide Mutual Aid	Statewide Mutual Aid	Statewide Mutual Aid	Statewide Mutual Aid	Statewide Mutual Aid

¹² As of Oct. 1, 2012

Frequencies	Channel	Site Name, County and FCC Call Sign							
		Northern Tier (West of the Divide)	Northern Tier (East of the Divide)	Lewis and Clark System	Gallatin County System	Central Montana	Eastern Montana	West/SW Montana	Billings Region
		WPOJ516	WQAV770	WPOJ515	WQAV770	WPOJ515/WQAV770	WQAV770	WPOJ516	WQAV770
157.3625 (A Band Only)	227R								
157.3750 (A Band only)	487R								
157.3875 (A Band only)	287R								

Color Key	
	Statewide Trunking System
	Other Conventional Use
	Statewide Mutual Aid
	Pending

Appendix B: DOA-Managed Licenses under FRN 0004535803 for the Montana Statewide System

#	Call Sign	Licensee Name	Class	Expiration Date
Trunking Class Designation				
1	WQDL357	Montana Statewide System - PSSB	YW	09/22/2015
2	WQDS863	Montana Statewide System - PSSB	YW	10/24/2015
3	WQFB536	Montana Statewide System - PSSB	YW	06/07/2016
4	WQFV948	Montana Statewide System - PSSB	YW	10/18/2016
5	WQHP993	Montana Statewide System - PSSB	YW	10/02/2017
6	WQH944	Montana Statewide System - PSSB	YW	10/10/2017
7	WQHS388	Montana Statewide System - PSSB	YW	10/23/2017
8	WQIF356	Montana Statewide System - PSSB	YW	01/23/2018
9	WQIQ395	Montana Statewide System - PSSB	YW	04/14/2018
10	WQIU357	Montana Statewide System - PSSB	YW	05/14/2018
11	WQJJ765	Montana Statewide System - PSSB	YW	10/03/2018
12	WQJK360	Montana Statewide System - PSSB	YW	10/09/2018
13	WQJK366	Montana Statewide System - PSSB	YW	10/09/2018
14	WQJK491	Montana Statewide System - PSSB	YW	10/10/2018
15	WQJL379	Montana Statewide System - PSSB	YW	10/21/2018
16	WQJL499	Montana Statewide System - PSSB	YW	10/22/2018
17	WQJL764	Montana Statewide System - PSSB	YW	10/27/2018
18	WQJN981	Montana Statewide System - PSSB	YW	11/13/2018
19	WQJN982	Montana Statewide System - PSSB	YW	11/13/2018
20	WQJT946	Montana Statewide System - PSSB	YW	01/02/2019
21	WQJU942	Montana Statewide System - PSSB	YW	01/08/2019
22	WQJU950	Montana Statewide System - PSSB	YW	01/08/2019
23	WQJX292	Montana Statewide System - PSSB	YW	01/30/2019
24	WQKA476	Montana Statewide System - PSSB	YW	03/05/2019
25	WQKA691	Montana Statewide System - PSSB	YW	03/10/2019
26	WQKA955	Montana Statewide System - PSSB	YW	03/13/2019
27	WQKB844	Montana Statewide System - PSSB	YW	03/23/2019
28	WQKC204	Montana Statewide System - PSSB	YW	03/24/2019
29	WQKC454	Montana Statewide System - PSSB	YW	03/27/2019
30	WQKD582	Montana Statewide System - PSSB	YW	04/09/2019

#	Call Sign	Licensee Name	Class	Expiration Date
31	WQKI242	Montana Statewide System - PSSB	YW	05/28/2019
32	WQKR271	Montana Statewide System - PSSB	YW	8/19/2019
33	WQMK540	Montana Statewide System - PSSB	YW	9/2/2020
34	WQMK541	Montana Statewide System - PSSB	YW	9/2/2020
35	WQMR272	Montana Statewide System - PSSB	YW	10/27/2020
36	WQPV296	Montana Statewide System - PSSB	YW	08/22/2022
37	WQRE905	Montana Statewide System - PSSB	YW	04/30/2023
38	WQRG295	Montana Statewide System - PSSB	YW	5/7/2023
39	WQRG472	Montana Statewide System - PSSB	YW	5/8/2023
40	WQRS491	Montana Statewide System - PSSB	YW	07/18/2023
Public Safety Class Designation				
1	WQKB774	Montana Statewide System - PSSB	PW	03/21/2019
2	WQKC951	Montana Statewide System - PSSB	PW	04/03/2019
3	WQKK336	Montana Statewide System - PSSB	PW	06/22/2019
4	WQKM357	Montana Statewide System - PSSB	PW	07/13/2019
5	WQLB772	Montana Statewide System - PSSB	PW	02/24/2023
Microwave Class Designation				
1	WQGS720	Montana Statewide System - PSSB	MW	04/06/2017
2	WQGS724	Montana Statewide System - PSSB	MW	04/06/2017
3	WQGS726	Montana Statewide System - PSSB	MW	04/06/2017
4	WQGS735	Montana Statewide System - PSSB	MW	04/06/2017
5	WQGT244	Montana Statewide System - PSSB	MW	04/10/2017
6	WQGT267	Montana Statewide System - PSSB	MW	04/10/2017
7	WQGT272	Montana Statewide System - PSSB	MW	04/10/2017
8	WQGT279	Montana Statewide System - PSSB	MW	04/10/2017
9	WQGT407	Montana Statewide System - PSSB	MW	04/11/2017
10	WQGT409	Montana Statewide System - PSSB	MW	04/11/2017
11	WQGT418	Montana Statewide System - PSSB	MW	04/11/2017
12	WQGT422	Montana Statewide System - PSSB	MW	04/11/2017
13	WQGT425	Montana Statewide System - PSSB	MW	04/11/2017
14	WQGT426	Montana Statewide System - PSSB	MW	04/11/2017
15	WQGT427	Montana Statewide System - PSSB	MW	04/11/2017
16	WQGT890	Montana Statewide System - PSSB	MW	04/16/2017

#	Call Sign	Licensee Name	Class	Expiration Date
17	WQGU309	Montana Statewide System - PSSB	MW	04/17/2017
18	WQGU982	Montana Statewide System - PSSB	MW	04/23/2017
19	WQGU989	Montana Statewide System - PSSB	MW	04/23/2017
20	WQGU996	Montana Statewide System - PSSB	MW	04/23/2017
21	WQGV581	Montana Statewide System - PSSB	MW	04/26/2017
22	WQGV652	Montana Statewide System - PSSB	MW	04/27/2017
23	WQHA327	Montana Statewide System - PSSB	MW	06/08/2017
24	WQJK229	Montana Statewide System - PSSB	MW	10/07/2018
25	WQKD498	Montana Statewide System - PSSB	MW	04/08/2019
26	WQKD499	Montana Statewide System - PSSB	MW	04/08/2019
27	WQKE213	Montana Statewide System - PSSB	MW	04/15/2019
28	WQKE214	Montana Statewide System - PSSB	MW	04/15/2019
29	WQKE215	Montana Statewide System - PSSB	MW	04/15/2019
30	WQKG946	Montana Statewide System - PSSB	MW	05/15/2019
31	WQKG948	Montana Statewide System - PSSB	MW	05/15/2019
32	WQKG950	Montana Statewide System - PSSB	MW	05/15/2019
33	WQKG967	Montana Statewide System - PSSB	MW	05/15/2019
34	WQKH260	Montana Statewide System - PSSB	MW	05/18/2019
35	WQKH261	Montana Statewide System - PSSB	MW	05/18/2019
36	WQKH262	Montana Statewide System - PSSB	MW	05/18/2019
37	WQKR216	Montana Statewide System - PSSB	MW	08/19/2019
38	WQLF688	Montana Statewide System - PSSB	MW	01/07/2020
39	WQLF689	Montana Statewide System - PSSB	MW	01/07/2020
40	WQLF708	Montana Statewide System - PSSB	MW	01/07/2020
41	WQLF722	Montana Statewide System - PSSB	MW	01/07/2020
42	WQLH253	Montana Statewide System - PSSB	MW	01/20/2020
43	WQLH530	Montana Statewide System - PSSB	MW	01/21/2020
44	WQMY675	Montana Statewide System - PSSB	MW	11/09/2020
45	WQMY676	Montana Statewide System - PSSB	MW	11/09/2020
46	WQMY678	Montana Statewide System - PSSB	MW	11/09/2020
47	WQMY683	Montana Statewide System - PSSB	MW	11/09/2020
48	WQMY700	Montana Statewide System - PSSB	MW	11/09/2020
49	WQMY707	Montana Statewide System - PSSB	MW	11/09/2020

#	Call Sign	Licensee Name	Class	Expiration Date
50	WQMY710	Montana Statewide System - PSSB	MW	11/09/2020
51	WQMY712	Montana Statewide System - PSSB	MW	11/09/2020
51	WQMY713	Montana Statewide System - PSSB	MW	11/09/2020
52	WQMZ461	Montana Statewide System - PSSB	MW	11/16/2020
53	WQNF488	Montana Statewide System - PSSB	MW	01/19/2021
54	WQNH996	Montana Statewide System - PSSB	MW	02/10/2021
55	WQNI207	Montana Statewide System - PSSB	MW	02/10/2021
56	WQNI208	Montana Statewide System - PSSB	MW	02/10/2021
57	WQNI209	Montana Statewide System - PSSB	MW	02/10/2021
58	WQNI210	Montana Statewide System - PSSB	MW	02/10/2021
59	WQNI213	Montana Statewide System - PSSB	MW	02/10/2021
60	WQNI214	Montana Statewide System - PSSB	MW	02/10/2021
61	WQNI217	Montana Statewide System - PSSB	MW	02/10/2021
62	WQNM639	Montana Statewide System - PSSB	MW	03/24/2021
63	WQNM675	Montana Statewide System - PSSB	MW	03/24/2021
64	WQNM689	Montana Statewide System - PSSB	MW	03/24/2021
65	WQNM691	Montana Statewide System - PSSB	MW	03/24/2021
66	WQOT273	Montana Statewide System - PSSB	MW	01/23/2022
67	WQOT274	Montana Statewide System - PSSB	MW	01/23/2022
68	WQPB230	Montana Statewide System - PSSB	MW	03/26/2022
69	WQQA945	Montana Statewide System - PSSB	MW	10/11/2022
70	WQQA947	Montana Statewide System - PSSB	MW	10/11/2022
71	WQQF963	Montana Statewide System - PSSB	MW	11/30/2022

Appendix C: DOA-Managed Licenses under FRN 0001643626

#	Call Sign	Licensee Name	Class	Expiration Date
Industrial/Business Class Designation				
1	KUT299	State of Montana – PSSB	IG	03/07/2023
2	WPTH765	State of Montana – PSSB	IG	10/04/2021
Public Safety 4940-4990 MHz Class Designation				
1	WQLK242	State of Montana – PSSB	PA	02/19/2020
2	WQQK559	State of Montana – PSSB	PA	01/14/2023
3	WQQK560	State of Montana – PSSB	PA	01/14/2023
Public Coast Class Designation				
1	WPOJ515	State of Montana – PSSB	PC	05/19/2019
2	WPOJ516	State of Montana – PSSB	PC	05/19/2019
3	WQAV770	State of Montana – PSSB	PC	05/19/2019
Microwave Public Safety Class Designation				
1	WPQM236	State of Montana – PSSB	MW	06/30/2019
Public Safety Pool, Conventional Class Designation				
1	KB21997	State of Montana – PSSB	PW	07/06/2022
2	KB46221	State of Montana – PSSB	PW	12/13/2013
3	KB63896	State of Montana – PSSB	PW	09/29/2014
4	KB65753	State of Montana – PSSB	PW	02/01/2015
5	KFZ901	State of Montana – PSSB	PW	06/10/2022
6	KNFB997	State of Montana – PSSB	PW	07/06/2014
7	KNHS815	State of Montana – PSSB	PW	05/31/2014
8	KNJX594	State of Montana – PSSB	PW	01/21/2022
9	KYK333	State of Montana – PSSB	PW	02/01/2015
10	WNCH471	State of Montana – PSSB	PW	03/28/2015
11	WNQN689	State of Montana – PSSB	PW	10/06/2014
12	WNRE362	State of Montana – PSSB	PW	04/23/2023
13	WNRQ746	State of Montana – PSSB	PW	03/19/2015
14	WNRQ749	State of Montana – PSSB	PW	03/19/2015
15	WNRQ750	State of Montana – PSSB	PW	03/19/2015

#	Call Sign	Licensee Name	Class	Expiration Date
16	WNRQ754	State of Montana – PSSB	PW	03/19/2015
17	WNRQ755	State of Montana - PSSB	PW	03/19/2015
18	WNRQ757	State of Montana - PSSB	PW	03/19/2015
19	WNRQ758	State of Montana - PSSB	PW	03/19/2015
20	WNRQ759	State of Montana - PSSB	PW	03/19/2015
21	WNRQ761	State of Montana - PSSB	PW	03/19/2015
22	WNRQ762	State of Montana - PSSB	PW	03/19/2015
23	WNRQ763	State of Montana - PSSB	PW	03/19/2015
24	WNRQ766	State of Montana - PSSB	PW	03/19/2015
25	WNRQ767	State of Montana - PSSB	PW	03/19/2015
26	WNRQ769	State of Montana - PSSB	PW	03/19/2015
27	WNRQ770	State of Montana - PSSB	PW	03/19/2015
28	WNRQ771	State of Montana - PSSB	PW	03/19/2015
29	WNRQ773	State of Montana	PW	03/19/2015
30	WNRQ774	State of Montana - PSSB	PW	03/19/2015
31	WNRQ775	State of Montana – PSSB	PW	03/19/2015
32	WNRQ777	State of Montana – PSSB	PW	03/19/2015
33	WNR240	State of Montana – PSSB	PW	03/20/2015
34	WNR242	State of Montana – PSSB	PW	03/20/2015
35	WNR243	State of Montana – PSSB	PW	03/20/2015
36	WNR245	State of Montana – PSSB	PW	03/20/2015
37	WNR246	State of Montana – PSSB	PW	03/20/2015
38	WNSD247	State of Montana – PSSB	PW	05/08/2015
39	WNST502	State of Montana – PSSB	PW	07/27/2015
40	WNST503	State of Montana – PSSB	PW	07/27/2015
41	WNSW984	State of Montana – PSSB	PW	07/27/2015
42	WNSW985	State of Montana – PSSB	PW	07/27/2015
43	WNSW986	State of Montana – PSSB	PW	07/27/2015
44	WNSX411	State of Montana – PSSB	PW	07/27/2015
45	WNSX419	State of Montana – PSSB	PW	07/27/2015
46	WNUB243	State of Montana – PSSB	PW	08/20/2015
47	WNUB350	State of Montana – PSSB	PW	08/17/2015
48	WNUB351	State of Montana – PSSB	PW	08/17/2015

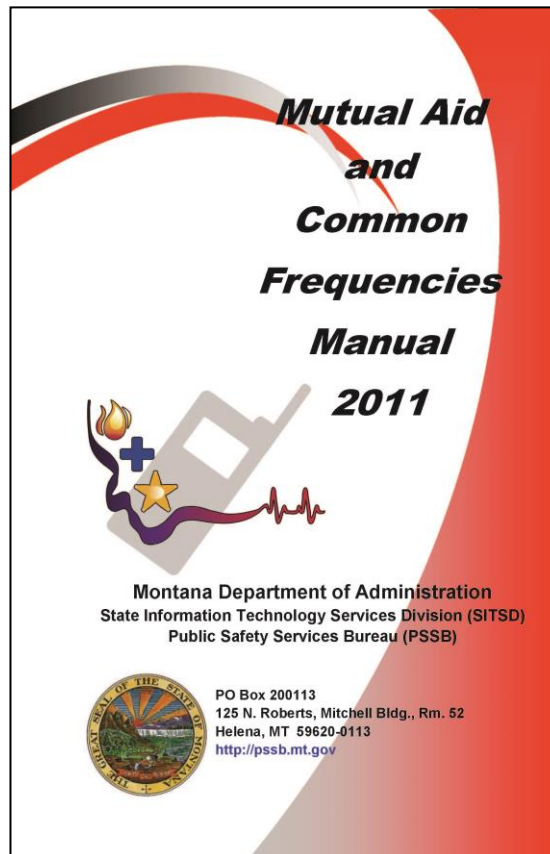
#	Call Sign	Licensee Name	Class	Expiration Date
49	WNUB352	State of Montana – PSSB	PW	08/17/2015
50	WNUB353	State of Montana – PSSB	PW	08/17/2015
51	WNUB354	State of Montana – PSSB	PW	08/17/2015
52	WNUB355	State of Montana – PSSB	PW	08/17/2015
53	WNUB356	State of Montana – PSSB	PW	08/17/2015
54	WNUB357	State of Montana – PSSB	PW	08/17/2015
55	WNUB358	State of Montana – PSSB	PW	08/17/2015
56	WNVB345	State of Montana – PSSB	PW	12/18/2015
57	WNVB346	State of Montana – PSSB	PW	12/18/2020
58	WNYD318	State of Montana – PSSB	PW	01/17/2022
59	WNYD503	State of Montana – PSSB	PW	01/16/2022
60	WNYD504	State of Montana – PSSB	PW	01/16/2022
61	WNYD505	State of Montana – PSSB	PW	01/16/2022
62	WNYD507	State of Montana – PSSB	PW	01/16/2022
63	WNYD515	State of Montana – PSSB	PW	01/16/2022
64	WNYD516	State of Montana – PSSB	PW	01/16/2022
65	WNYD517	State of Montana – PSSB	PW	01/16/2022
66	WNYF957	State of Montana – PSSB	PW	01/16/2022
67	WPCP794	State of Montana – PSSB	PW	07/06/2023
68	WPEZ829	State of Montana – PSSB	PW	06/03/2014
69	WPGA635	State of Montana – PSSB	PW	11/21/2014
70	WPJM654	State of Montana – PSSB	PW	08/08/2021
71	WPJT420	State of Montana – PSSB	PW	10/16/2021
72	WPSF829	State of Montana – PSSB	PW	04/10/2021
73	WPZX529	State of Montana – PSSB	PW	04/05/2014
74	WQDI864	State of Montana – PSSB	PW	09/07/2015
75	WQDJ478	State of Montana – PSSB	PW	09/12/2015
76	WQDJ651	State of Montana – PSSB	PW	09/13/2015
77	WQDJ792	State of Montana – PSSB	PW	09/13/2015
78	WQDJ797	State of Montana – PSSB	PW	09/13/2015
79	WQDJ799	State of Montana – PSSB	PW	09/13/2015
80	WQDK716	State of Montana – PSSB	PW	09/20/2015

#	Call Sign	Licensee Name	Class	Expiration Date
81	WQDM971	State of Montana – PSSB	PW	10/05/2015
82	WQDT338	State of Montana – PSSB	PW	10/25/2015
83	WQDT465	State of Montana – PSSB	PW	10/26/2015
84	WQDT919	State of Montana – PSSB	PW	10/28/2015
85	WQDV426	State of Montana – PSSB	PW	11/07/2015
86	WQDW896	State of Montana – PSSB	PW	11/18/2015
87	WQDW898	State of Montana – PSSB	PW	11/18/2015
88	WQDX897	State of Montana – PSSB	PW	11/28/2015
89	WQDZ731	State of Montana – PSSB	PW	12/08/2015
90	WQEF787	State of Montana – PSSB	PW	01/17/2016
91	WQEQ250	State of Montana – PSSB	PW	03/22/2016
92	WQEQ311	State of Montana – PSSB	PW	03/22/2016
93	WQEZ453	State of Montana – PSSB	PW	05/24/2016
94	WQEZ454	State of Montana – PSSB	PW	05/24/2016
95	WQFJ769	State of Montana – PSSB	PW	08/01/2016
96	WQG911	State of Montana – PSSB	PW	04/12/2023
97	WQGE554	State of Montana – PSSB	PW	12/26/2016
98	WQHF816	State of Montana – PSSB	PW	07/19/2017
99	WQHF817	State of Montana – PSSB	PW	07/19/2017
100	WQHH220	State of Montana – PSSB	PW	07/26/2017
101	WQHR888	State of Montana – PSSB	PW	10/19/2017
102	WQHS512	State of Montana – PSSB	PW	10/24/2017
103	WQHU517	State of Montana – PSSB	PW	11/08/2017
104	WQJG810	State of Montana – PSSB	PW	09/04/2018
105	WQJM263	State of Montana – PSSB	PW	10/30/2018
106	WQLR792	STATE OF MONTANA – PSSB	PW	04/09/2020
107	WQMA259	State of Montana – PSSB	PW	06/09/2020
108	WQMA260	State of Montana – PSSB	PW	06/09/2020
109	WQMC288	State of Montana – PSSB	PW	06/24/2020
110	WQMC290	State of Montana – PSSB	PW	06/24/2020
111	WQMC521	State of Montana – PSSB	PW	06/28/2020
112	WQNN639	State of Montana – PSSB	PW	03/31/2021
113	WQOB614	STATE OF MONTANA - PSSB	PW	08/04/2021

#	Call Sign	Licensee Name	Class	Expiration Date
114	WQOI240	State of Montana – PSSB	PW	10/04/2021
115	WQOK249	State of Montana – PSSB	PW	10/24/2021
116	WQOK432	State of Montana – PSSB	PW	10/26/2021
117	WQOW601	State of Montana – PSSB	PW	02/16/2022
118	WQOW835	State of Montana – PSSB	PW	02/21/2022
119	WQPI442	State of Montana – PSSB	PW	05/29/2022
120	WQPJ811	State of Montana – PSSB	PW	06/07/2022
121	WQQN661	State of Montana – PSSB	PW	02/04/2023
Public Safety Pool, 700 MHz Class Designation				
1	WPTZ809	MONTANA, STATE OF	SL	05/14/2017

Appendix D: Montana Mutual Aid and Common Frequencies Manual

The latest version of the Montana Mutual Aid and Common Frequencies Manual is available at this link: http://pssb.mt.gov/mutual_aid_manual.mcp.x.



Annex: Spectrum Utilization Planning & Coordination Work Plan for Achieving Goals and Objectives

The availability of spectrum for State of Montana operations is becoming limited as more wireless device users are requiring additional resources. This is true on both a public and private level. New reliance on technology and mobile applications in all frequency bands increases the need for effective spectrum management. Montana's governmental agencies—each having specific spectrum needs and public missions—will need to collaborate to effectively use spectrum resources and meet the needs of Montana's citizens.

In fact, collaboration is key to the success achievement of the goals and objectives outlined in this document. It will be critical to build partnerships with key stakeholders to facilitate the positive flow of information and to determine local, state and tribal needs.

The following goals and objectives for the LMR Public Safety Spectrum Utilization Planning and Coordination Program were developed to address the spectrum needs of local, state and tribal stakeholders, to effectively manage Montana's spectrum resources, and to comply with the requirements of MCA 2-17-541 et seq. The comprehensive review and reporting strategy presented here should result in improved spectrum management for the State of Montana.

Goal 1: Work with Stakeholders to Enhance the Effectiveness of Montana's Spectrum Utilization Planning

Objective 1: Work with Statewide Public Safety Communications Technical Groups to Establish a Frequency Advisory Subcommittee

- DOA has well-established management and oversight procedures for the Montana Mutual Aid frequency program, which involve numerous stakeholders. However, other radio systems in the state have not historically been evaluated on a formal basis. In the past, general LMR coordination between local, state and tribal systems has not been well defined. Because this process represents an ongoing need, DOA proposes to work with statewide public safety communications technical groups to establish a Frequency Advisory Subcommittee to review technical and policy-related spectrum issues for proposed LMR systems.
- The committee will meet no less than twice a year. A report of Frequency Advisory Subcommittee activities will be provided to the CIO and PSCB Chief annually.

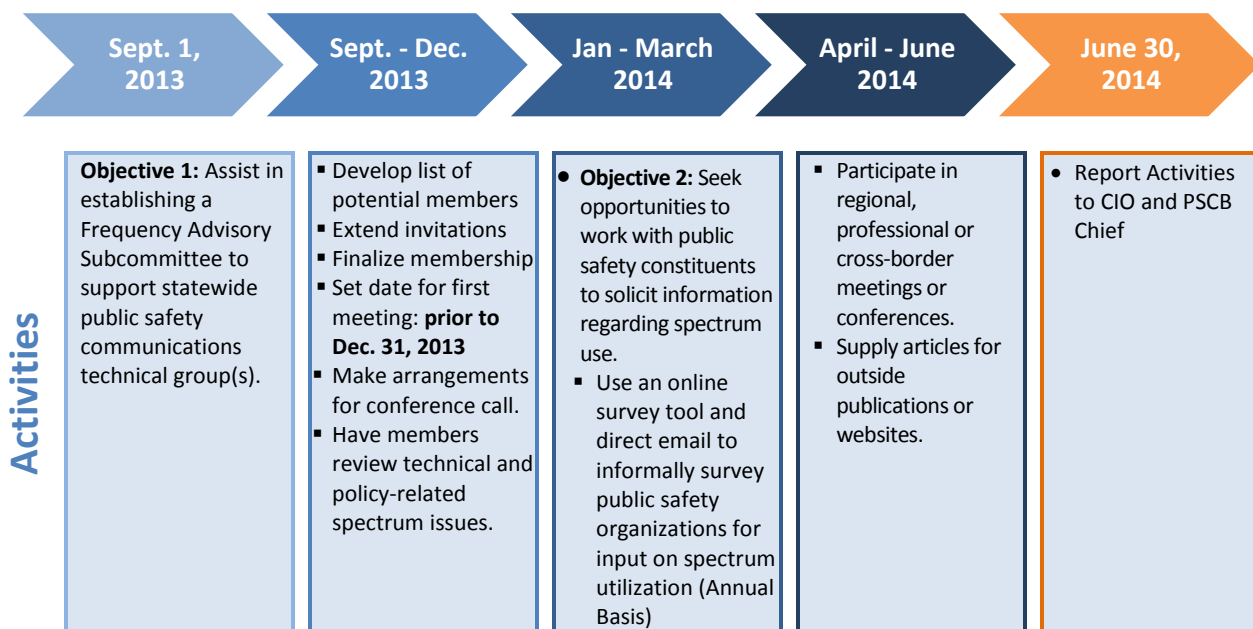
Objective 2: Build and Maintain Relationships with Public Safety Constituents to Foster Open Dialogue and Collaboration

- **Informally Survey Public Safety Groups:** Informal surveying of public safety organizations will be conducted to determine any communication concerns pertaining to Montana's spectrum utilization.
- **Seek Opportunities to Work with Public Safety Constituents:** Opportunities to solicit information regarding spectrum use from local, state, tribal, federal and Canadian public safety radio users will be pursued. These may include participating in regional, professional or cross-border meetings or conferences, making presentations at meetings/conferences, facilitating

roundtable discussions, supplying articles for outside publications or websites, and direct e-mail communication.

Figure 3: Working with Stakeholders to Enhance Effectiveness of Spectrum Planning Timeline for Goal 1

Goal 1: Work with Stakeholders to Enhance the Effectiveness of Montana's Spectrum Utilization Planning



PSCB SPECTRUM COORDINATION PROGRAM WORK PLAN

DATE: _____

Goal 1: Work with Stakeholders to Enhance the Effectiveness of Montana's Spectrum Utilization Planning				
Objectives	Performance Measures	Resources	Target Timeline	Update/Status
Objective 1: Assist in establishing a Frequency Advisory Subcommittee to support statewide public safety communications technical group(s).	<ol style="list-style-type: none"> 1. Develop list of potential members 2. Create a distribution list for email notifications. 3. Set date for first meeting and distribute meeting notice. 		<ol style="list-style-type: none"> 1. Set meeting date in Aug. each year. 2. Send invitations in Aug. each year. 	
	Complete and submit conference call request form.	Conference Call	Three weeks prior to call.	
	Produce and distribute meeting materials to facilitate discussion.		Early September: Distribute meeting materials and conference bridge info.	
Convene Initial Frequency Advisory Subcommittee	Hold meeting and conference call. Have members review technical and policy-related spectrum issues.		September each year	
With group, develop a list of spectrum goals and objectives	<ol style="list-style-type: none"> 1. Discuss and track program concerns and needs; 2. Brainstorm potential actions. 3. Distribute initial meeting notes and summary 		<ol style="list-style-type: none"> 1. Hold discussion during the September the meeting. 2. Distribute within five days following the meeting. 	
Conduct annual survey of public safety spectrum utilization	<ol style="list-style-type: none"> 1. Develop a survey representing internal and external concerns. 2. Identify distribution of survey. 3. Initiate tool for survey. 4. Conduct survey. 5. Collect and analyze results. 	Survey Monkey	<ol style="list-style-type: none"> 1. Dec. 2013: Develop survey options. 2. Mid -January, 2014: Finalize the survey 3. 3rd week in January: Initiate survey and invite wide participation. 4. Keep survey open for three weeks. 5. Last week of February: Have results compiled. 	
Send feedback to members	<ol style="list-style-type: none"> 1. Distribute survey results to committee members. 2. Set objectives for next meeting. 		<ol style="list-style-type: none"> 1. Early March: Distribute results 2. Two weeks prior to second frequency meeting: Prepare objectives. 	
Report to PSCB/SITSD Management	<ol style="list-style-type: none"> 1. Include activities in weekly status reports. 2. Produce Objective Tracking Summary on a quarterly basis. 		<ol style="list-style-type: none"> 1. Weekly – ongoing 2. Produce summary the last week of Sept, Jan., April and July. 	
Convene second frequency meeting	<ol style="list-style-type: none"> 1. Set date for meeting and distribute meeting notice. 2. Produce meeting materials to facilitate discussion. 		<ol style="list-style-type: none"> 1. Conduct meeting prior to April 1 in each year. 2. Distribute meeting documents two weeks prior to meeting. 	

Goal 2: Provide Spectrum Support to Local, State and Tribal Public Safety Entities

Objective 1: Provide spectrum support to local, state and tribal public safety entities on an ongoing basis.

Such support could pertain to spectrum usage, allocation, technical standards and operational issues. The DOA Spectrum Coordination Program within PSCB will:

- Track significant support provided to public safety agencies.
- Participate in the FCC-established 700 MHz Regional Planning Committee, which was responsible for developing Montana's 700 MHz Plan. The Committee's purpose is to meet state and local needs, encourage innovative use of the spectrum, and accommodate developments in technology and equipment.
- Participate in the FCC-established 800 MHz Regional Planning Committee, which developed Montana's 800 MHz Plan that allocates pools of frequencies for counties, state agency use, and reserves for future needs.
- Document local, state and tribal support for inclusion in the annual spectrum utilization report.

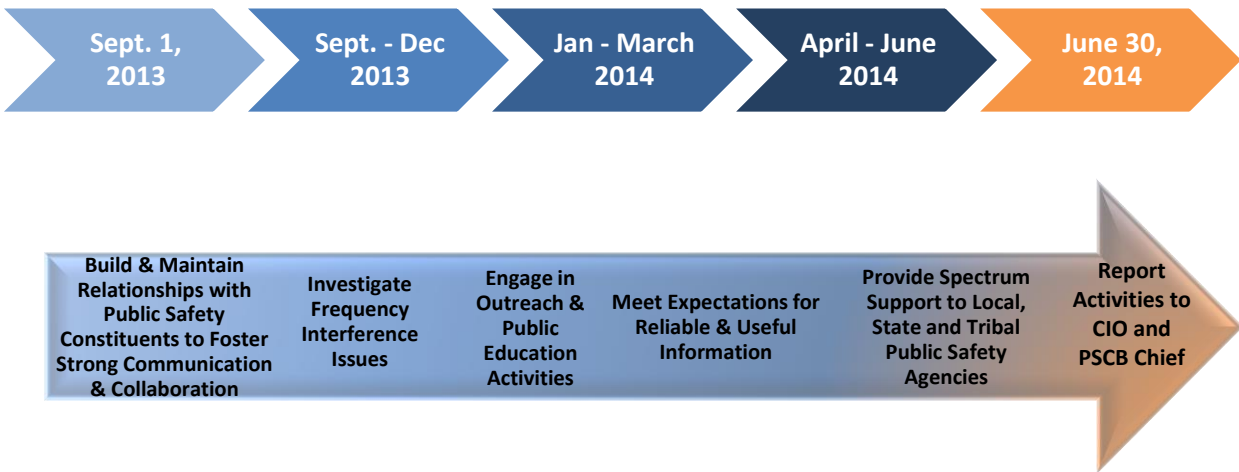
Objective 2: Investigate Spectrum Interference Issues:

Protecting radio signals—especially mutual aid signals—from interference is vitally important to public safety responders. The process of investigating interference issues involves several of the following steps:

- Obtain detailed information about the nature of the interference, such as which frequencies are affected, when the interference occurs, when it started, which geographical areas are involved, what the weather conditions were like, etc.
- Determine how the affected service is supposed to operate and how it is being impaired.
- When possible, make arrangements for the affected equipment to be tested or changed to determine if it is the source of the interference. At the same time, the installation itself should be checked to see if it is contributing to the interference.
- Make arrangements for measurements of interference levels, modulation, and direction, if needed.
- Troubleshoot with others in the state and/or industry as appropriate to help resolve the issue.
- Issue informative correspondence, if necessary, to notify offenders of the need to stop interfering with essential public safety communications.

Certain activities, such as those described in Goals 1 and 2, are ongoing in nature. These have been captured in Figure 4.

Figure 4: Ongoing Frequency Coordination Activities



PSCB SPECTRUM COORDINATION PROGRAM WORK PLAN

DATE: _____

Goal 2: Provide Spectrum Support to Local, State and Tribal Public Safety Entities				
Objectives	Performance Measures	Resources	Target Timeline	Update/Status
Objective 1: Provide spectrum support to local, state and tribal public safety entities on an ongoing basis			Ongoing	
Track significant support provided to public safety agencies	Keep the tracking spreadsheet up to date.		Compile data on an annual basis to be included in the annual spectrum utilization report	
Participate in the 700 MHz Regional Planning Committee		Possible travel or conference call expenses.	As needed	
Participate in the 800 MHz Regional Planning Committee		Possible travel or conference call expenses.	As needed	
Objective 2: Investigate spectrum interference Issues			Ongoing	
	Obtain detailed information about the nature of the interference, such as which frequencies are affected, when the interference occurs, when it started, which geographical areas are involved, what the weather conditions were like, etc.	Possible travel	As needed	
	Determine how the affected service is supposed to operate and how it is being impaired.	Possible travel	As needed	
	Make arrangements for measurements of interference levels, modulation, and direction, if needed.	Possible travel, contractor work, equipment and/or software purchases	As needed	
	Troubleshoot with state and/or industry experts as needed to help resolve the issue.		As needed	
	Issue informative correspondence, if necessary, to notify offenders of the need to stop interfering with essential public safety communications.		As needed	

Goal 3: Effectively Manage the Montana Mutual Aid Frequency Program

Objective 1: Enhance Collaboration and Coordination with Mutual Aid Law Enforcement, Fire and EMS Advisory Councils

- **Regularly Update Advisory Council Membership:** Membership of the Advisory Councils will be updated at least annually.
- **Coordinate with Advisory Councils:** Members of the Law Enforcement, Fire and EMS Mutual Aid Advisory Councils will receive regular electronic communication soliciting input and requesting their assistance with determining the need for updates and/or changes to Mutual Aid Standard Operating Procedures (SOPs).
- **Meet with Advisory Council Members:** Group meetings will be facilitated no less than once every three years, prior to the re-publication of the *Mutual Aid and Common Frequency Manual*. These meetings can be face-to-face or via telephone or webinars, whichever method is agreed upon as being most efficient and convenient.

Objective 2: Update Mutual Aid Guidance and SOPs on an Ongoing Basis:

Activities related to this objective may include, but are not limited to, the following:

- **Evaluate and Re-work Core SOP Elements:** As required, DOA will evaluate and update core elements of the Montana Mutual Aid and Common Frequencies guidance and SOPs on an ongoing basis.
- **Regularly Post Updates to the PSCB Website:** Any corrections or updates to the Mutual Aid guidance and SOPs will be posted to the PSCB *Mutual Aid & Common Frequencies Manual* website (http://pssb.mt.gov/mutual_aid_manual.mcp) as soon as possible.
- **Regularly Update the Online Manual:** In addition to notices on the website, the downloadable version of the *Mutual Aid & Common Frequencies Manual* will be updated so that the manual reflects the most accurate and current information available.
- **Work with Canadian Partners and Other States:** Such work will focus on mutual aid frequency use and naming conventions.
- **Notify Constituents of Changes to Mutual Aid Guidance or Permitting:** If a significant change is made in the guidance/SOPs or permitting process, a concerted effort will be made to immediately notify public safety constituents of these changes via electronic media.
- **Engage in Outreach and Public Education Activities:** Opportunities to inform members of Montana's public safety community about relevant spectrum issues is an ongoing PSCB initiative. A range of communication channels is typically used to distribute information, including the following:
 - PSCB website information and links to other sites.
 - Direct re-distribution via e-mail of updates, articles, and/or information from national professional organizations (organizations such as APCO, AASHTO, NPSTC, Fire Chiefs Association, Police Chiefs Association, etc.)
 - Publication of PSCB-produced "Public Notices" targeted to board members of state public safety agencies and specialized e-mail distribution lists.
 - Presentations at local/regional/state meetings.

- Newsletter articles.
- Social media.
- **Be Customer-Focused by Meeting Expectations for Reliable and Useful Information:** Useful tools for first responders, such as the Mutual Aid Pocket and Visor Reference Cards, will be developed and made available for online downloads. The availability of such tools will be publicized via electronic media.

Objective 3: Effectively Manage the Online Mutual Aid Permit Request System

- Review and process online applications within two-weeks of their submission. Use objective criteria to make determinations about whether a permit request is approved or rejected. If a permit is rejected, the applicant will be advised as to the rationale.
- Ensure that the online permit request system (<https://app.mt.gov/mutualaid/>) is user friendly and functional. Work with Montana Interactive on a site re-design that will be self-funded and provide for enhanced security, refreshed technology and mobile-ready capability.
- Review and update the behind-the-scenes functioning of the online permitting computer application on an as-needed basis. DOA will ensure that it budgets funds for contract work as needed.

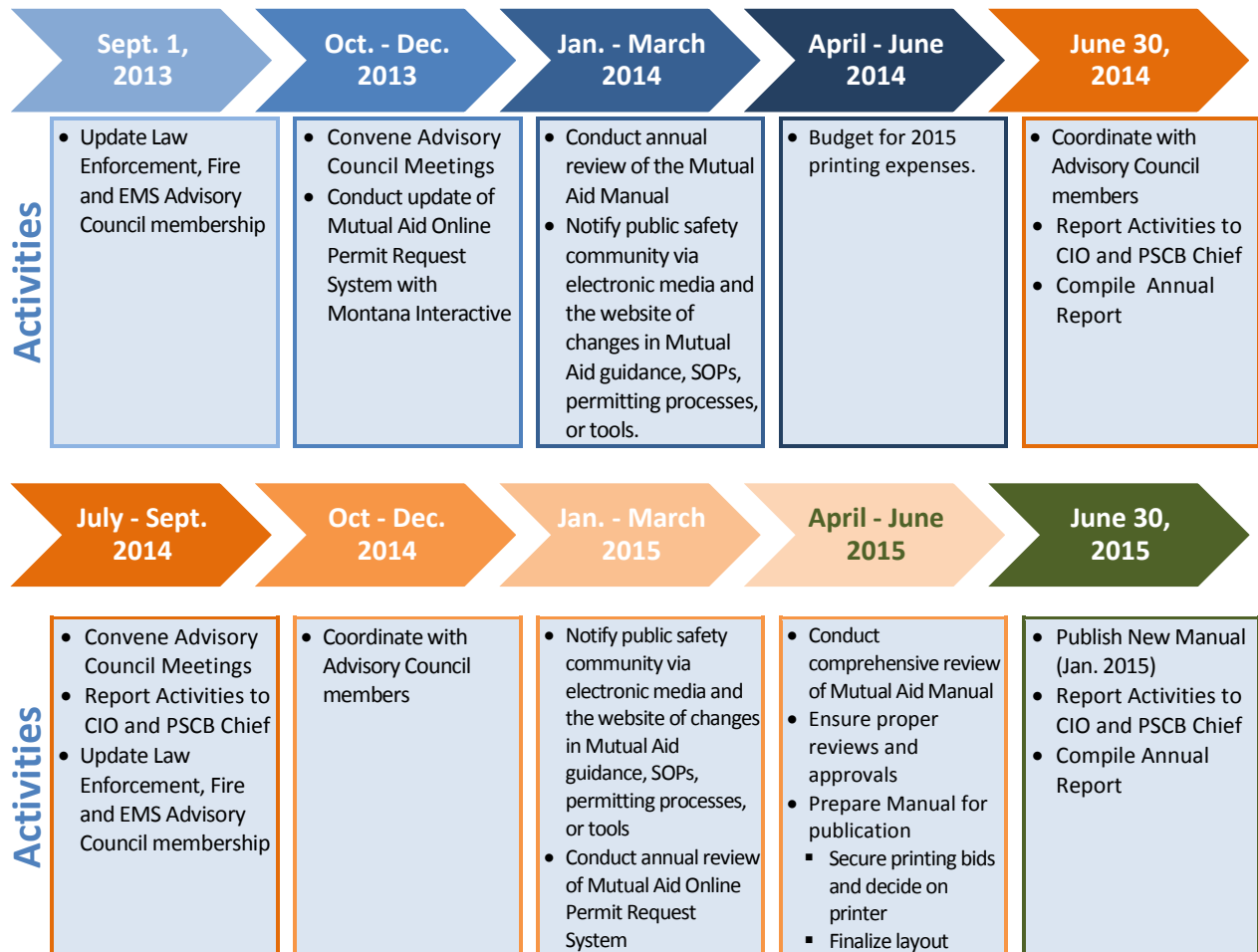
Objective 4: Re-Publish the Mutual Aid Manual and Common Frequencies Manual Every Three Years

- A comprehensive review and revision of the Montana Mutual Aid and Common Frequency Manual is scheduled for every three years.
- Because it is posted online, downloaded copies of the Manual will be routinely available. Evaluation of the need for printed copies will be made and budgeted by DOA.

A timeline of these activities is presented in Figure 5.

Figure 5: Mutual Aid Frequency Management Timeline for Goal 3

Goal 3: Effectively Manage the Montana Mutual Aid Frequency Program



The work plan for these activities appears on the next page.

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DATE: _____

Goal 3: Effectively Manage the Montana Mutual Aid Frequency Program				
Objectives	Performance Measures	Resources	Target Timeline	Update/Status
Objective 1: Enhance Collaboration and Coordination with Mutual Aid Law Enforcement, Fire and EMS Advisory Councils				
Regularly Update Advisory Council Membership	Membership of the Advisory Councils will be updated		At least annually.	
Coordinate with Advisory Councils	Members of the Law Enforcement, Fire and EMS Mutual Aid Advisory Councils will receive regular electronic communication soliciting input and requesting their assistance with determining the need for updates and/or changes to Mutual Aid Standard Operating Procedures (SOPs).		Ongoing	
Meet with Advisory Council Members	Group meetings will be facilitated. These meetings can be face-to-face or via telephone or webinars, whichever method is agreed upon as being most efficient and convenient.	Travel and/or Conference Calls	No less than once every other year; Must meet prior to the re-publication of the Mutual Aid and Common Frequency Manual, which occurs every three years.	
Objective 2: Update Mutual Aid Guidance and SOPs on an Ongoing Basis:			Ongoing	
Evaluate and Re-work Core SOP Elements as Needed:	DOA will evaluate and update core elements of the Montana Mutual Aid and Common Frequencies guidance and SOPs.		Ongoing	
	Regularly Post Updates to the PSCB Website: Any corrections or updates to the Mutual Aid guidance and SOPs will be posted to the PSCB Mutual Aid & Common Frequencies Manual website (http://pssb.mt.gov/mutual_aid_manual.mcpv) as soon as possible.		As Needed	

Goal 3: Effectively Manage the Montana Mutual Aid Frequency Program (Continued)				
Objectives	Performance Measures	Resources	Target Timeline	Update/Status
Keep an updated version of the Manual posted online.	An up-to-date, downloadable version of the Mutual Aid & Common Frequencies Manual will be routinely available on the PSCB website. The manual will consistently reflect the most accurate and current information available.		Ongoing	
Work with Canadian Partners and Other States:	Such work will focus on mutual aid spectrum use and naming conventions.			
Notify Constituents of Changes to Mutual Aid Guidance or Permitting	If a significant change is made in the guidance/SOPs or permitting process, a concerted effort will be made to notify public safety constituents of these changes via electronic media.		Distribute notifications to stakeholders immediately upon update or change.	
Engage in Outreach and Public Education Activities	<p>Informing members of Montana's public safety community about relevant spectrum issues is an ongoing PSCB initiative. A range of communication channels is typically used to distribute information, including the following:</p> <ul style="list-style-type: none"> • PSCB website information and links to other sites. • Direct re-distribution via e-mail of updates, articles, and/or information from national professional organizations (organizations such as APCO, AASHTO, NPSTC, Fire Chiefs Association, Police Chiefs Association, etc.) ▪ Publication of PSCB-produced "Public Notices" targeted to board members of state public safety agencies and specialized e-mail distribution lists. ▪ Presentations at local/regional/state meetings. ▪ Newsletter articles. ▪ Social media. 	Attend local/regional/state meetings to give presentations and/or sponsor an informational booth/table.	Ongoing	

Goal 3: Effectively Manage the Montana Mutual Aid Frequency Program (Continued)				
Objectives	Performance Measures	Resources	Target Timeline	Update/Status
Be Customer-Focused	Meet expectations for reliable and useful information. Useful tools for first responders, such as the Mutual Aid Pocket and Visor Reference Cards, will be developed and made available for online downloads. The availability of such tools will be publicized via electronic media.		Ongoing	
Objective 3: Effectively Manage the Online Mutual Aid Permit Request System				
Review and process online applications within two-weeks of their submission.	Use objective criteria to make determinations about whether a permit request is approved or rejected. If a permit is rejected, the applicant will be advised as to the rationale.		Within two-weeks of their submission.	
Review and update the behind-the-scenes functioning of the online permitting computer application to ensure that the online permit request system (located at https://app.mt.gov/mutualaid/) is user friendly and functional.	Work with Montana Interactive on a site re-design that will be self-funded and provide for enhanced security, refreshed technology and mobile-ready capability.		Implement updated online system within six months of project initiation.	
Objective 4: Re-Publish the Mutual Aid Manual and Common Frequencies Manual	A comprehensive review and revision of the Montana Mutual Aid and Common Frequency Manual is to be conducted on a regular basis.		Every Three Years	
	Evaluation of the need for printed copies will be made and budgeted by DOA.	Budget for Printing	Every Three Years	

Goal 4: Annually Review Montana Mutual Aid FCC Licenses

Objective 1: Montana's Mutual Aid FCC licenses shall undergo a comprehensive review on an annual basis.

At a minimum, the program review shall include the following activities:

- Review and evaluate all Mutual Aid licenses
- Note any needed changes (i.e. renewals, technical updates, etc.) and implement them.
- Document activities so they may be summarized and included in the Annual Report.

Goal 5: Annually Review DOA-Managed FCC Licenses

Objective 1: DOA will conduct an annual review of each FCC Call Sign held under FRN 0001643626, which will include the following activities:

- Determine which licenses need updating or renewal.
- Confirm current use of licensed spectrum.
- Participate in formal training to enhance skills and knowledge.
- Determine any changes that need to be made in the technical use of each license (antenna height, location changes, frequency use and other related parameters).
- Coordinate these adjustments through the approved frequency coordinators and the FCC.
- Document these changes to be included in the Spectrum Utilization Annual Report.

Goal 6: Annually Review FCC Licenses Managed by DOA on behalf of the Statewide Public Safety Communications System

Objective 1: DOA will conduct an annual review of each FCC Call Sign held under FRN 0004535803.

At the time of publication, DOA managed the spectrum licensed under FRN# 0004535803 for the cooperative statewide public safety communications system. This spectrum is managed to maintain the appropriate VHF trunking and digital microwave spectrum necessary to keep the entire statewide system operational. DOA shall conduct the following activities on a regular basis:

- Review licenses needing update or renewal.
- Confirm current use of licensed spectrum.
- Participate in formal training to enhance skills and knowledge
- Determine any changes needing to be made in the technical use of each license (antenna height, location changes, frequency use and other related parameters) and coordinated these adjustments through the approved frequency coordinators and the FCC.
- Include findings and changes in the Annual Report.

Goal 7: Annually Review Montana State Government FCC Licenses

Objective 1: PSCB will work with the proposed Frequency Advisory Committee and the State Government Radio Users Task Force to conduct a systematic annual review of spectrum utilization.

This review will cover the FCC registration numbers and agencies presented previously in Table 18 as well as those listed in Table 1.

Table 20: State of Montana Spectrum to be Reviewed Annually

FRN Number	State Agency License Name
0004256244	DNRC State of Montana
0004256251	Montana Department of Transportation and on behalf of the Departments of Corrections; Fish, Wildlife and Parks; and Livestock
0007635873	Montana, State of (Criminal Investigation Bureau)
0004535787	Montana, State of (Dept of Justice Mt Hwy Patrol Div)
0004948923	Montana, State of (MHP)
0001648070	Montana, State of (Disaster & Emergency Svcs Div)
0005772512	Montana, State of (Fish, Wildlife & Parks)
0018669358	Montana, State of (Legislative Branch)

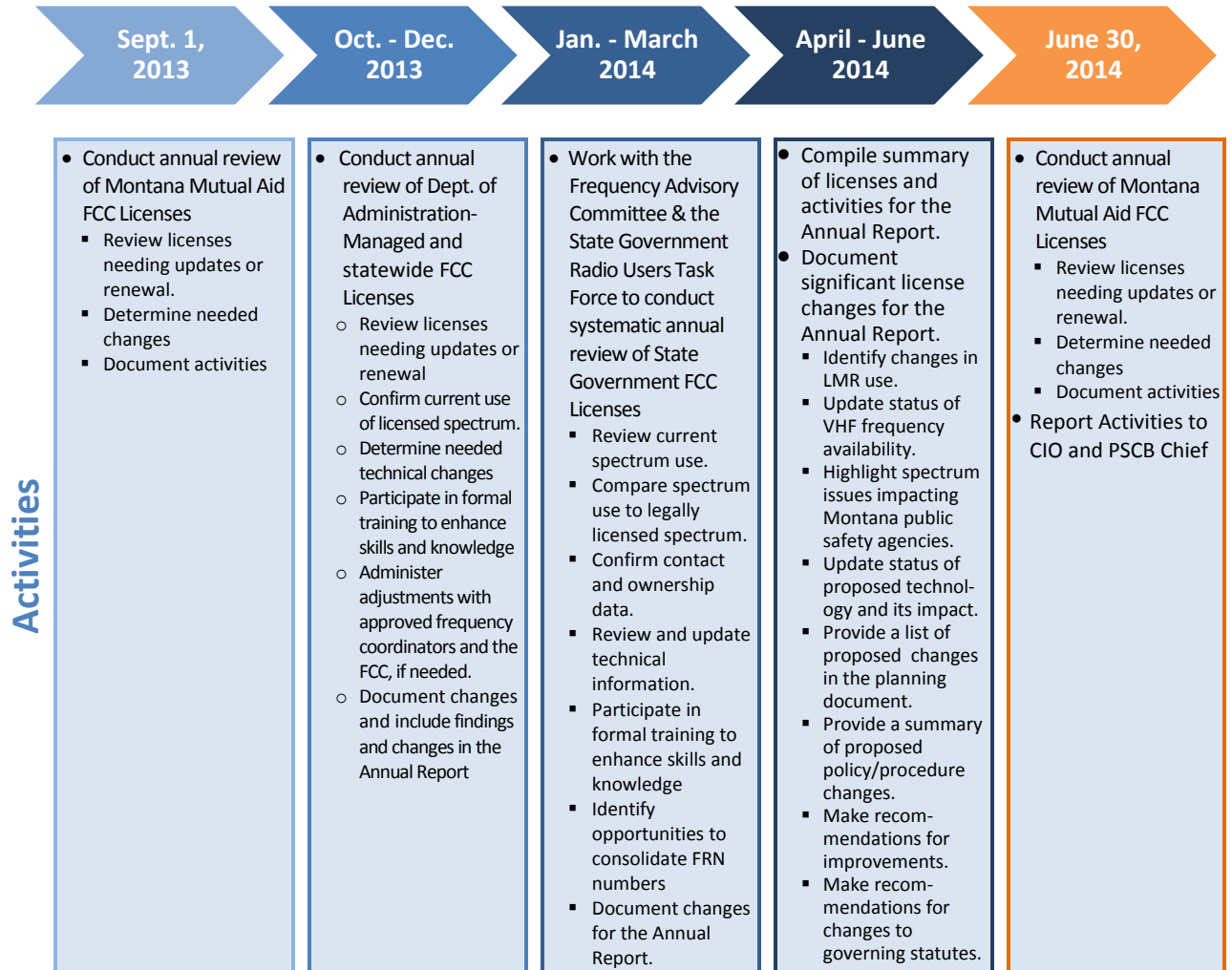
The comprehensive analysis of State of Montana-held spectrum will include the following activities:

- Review current spectrum use.
- Compare spectrum use to legally licensed spectrum to determine if spectrum is being used in accordance with FCC regulations.
- Confirm appropriate contact and ownership data on licenses.
- Review and update technical information, as needed
- Determine whether opportunities exist to consolidate FRN numbers
- Participate in formal training to enhance skills and knowledge
- Document any changes to be included in the Spectrum Utilization Annual Report.

A timeline for accomplishment of Goals 4, 5, 6, 7 and 8 is presented in Figure 6.

Figure 6: Annual Review of FCC Licenses Timeline for Goals 4, 5, 6 & 7

Goals 4, 5, 6 & 7: Annual Review Mutual Aid, DOA, statewide system and State Government FCC Licenses



The work plans for Goals 4 through 7 appear on the next page.

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Goal 4: Annually Review Montana Mutual Aid FCC Licenses				
Objective	Performance Measures	Resources	Target Timeline	Update/Status
Conduct an annual review of Montana's Mutual Aid FCC licenses.	Review and evaluate all Mutual Aid licenses.		Annually - During the second quarter of each fiscal year (October - December).	
	Note any needed changes (i.e. renewals, technical updates, etc.) and implement them.		Annually	
	Document activities so they may be summarized and included in the Annual Report		Annually	
Goal 5: Annually Review DOA-Managed FCC Licenses				
Objective	Performance Measures	Resources	Target Timeline	Update/Status
Conduct an annual review of Dept. of Administration-Managed and statewide FCC Licenses	Review licenses needing updates or renewal.		Annually - During the second quarter of each fiscal year (October - December).	
	Confirm use of licensed spectrum.		Annually	
	Participate in formal training to enhance skills and knowledge	Training and travel	Annually	
	Determine needed technical changes		Annually	
	Administer adjustments with approved frequency coordinators and the FCC.	Frequency Coordination fees	If needed	
	Document changes and include findings and changes in the Annual Report		Annually	
Goal 6: Annually Review FCC Licenses Managed by DOA on behalf of the Statewide Public Safety Communications System				
Objective	Performance Measures	Resources	Target Timeline	Update/Status
Conduct an annual review of FCC Licenses managed by DOA on behalf of the statewide public safety communications system.	Review licenses needing updates or renewal.		Annually - During the second quarter of each fiscal year (October - December).	
	Confirm use of licensed spectrum.		Annually	

Goal 6: Annually Review FCC Licenses Managed by DOA on behalf of the Statewide Public Safety Communications System (Continued)				
Objective	Performance Measures	Resources	Target Timeline	Update/Status
	Participate in formal training to enhance skills and knowledge	Training and travel	Annually	
	Determine needed technical changes		Annually	
	Administer adjustments with approved frequency coordinators and the FCC.	Frequency Coordination fees	If needed	
	Document changes and include them in the Annual Report		Annually	
Goal 7: Annually Review Montana State Government FCC Licenses				
Objective	Performance Measures	Resources	Target Timeline	Update/Status
Objective 1: Work with the proposed Frequency Advisory Subcommittee and state government radio users to conduct a systematic annual review of spectrum utilization.	Review current spectrum use.		Annually - During the second quarter of each fiscal year (October - December).	
	Compare spectrum use to legally licensed spectrum to determine if spectrum is being used in accordance with FCC regulations.		Annually	
	Confirm appropriate contact and ownership data on licenses.		Annually	
	Participate in formal training to enhance skills and knowledge	Training and travel	Annually	
	Review and update technical information on licenses		As needed	
	Determine whether opportunities exist to consolidate FRN numbers		Annually	
	Include data, observations and issues in the agendas and meetings of the Frequency Advisory Subcommittee.		As needed	
	Document any changes to be included in the Spectrum Utilization Annual Report.		Annually	

Goal 8: Produce an Annual Report about Montana's Spectrum Utilization Planning and Coordination Program

Objective 1: Timing:

The annual report to the DOA Director and the Chief Information Officer (CIO) will be completed in January of each year, beginning in 2014.

Objective 2: Production of Annual Report:

Goal achievements will be summarized and included in the Spectrum Utilization Planning and Coordination Program Annual Report. This information will be provided to the DOA Director and CIO for use in technology decisions and strategic planning. This report will include:

- A summary of the total FCC licensed spectrum held by the State of Montana.
- A review of significant changes to spectrum control from the previous year.
- Identification of changes in LMR use.
- A status update on VHF frequency availability.
- Highlighted spectrum issues impacting Montana public safety agencies.
- A status update on proposed technology and its impact on Montana public safety operations.
- A list of proposed changes to the Land Mobile Radio Public Safety Spectrum Utilization Planning and Coordination Program document.
- A summary of proposed changes to policies and procedures.
- Recommendations for improved use and management of spectrum, consolidation of operations, and other technical/administrative changes.
- Recommendations for changes to MCA et seq.2-17-543.

The work plan for these objectives appears on the next page.

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Goal 8: Produce an Annual Report about Montana's Spectrum Utilization Planning and Coordination Program				
Objective	Performance Measures	Resources	Target Timeline	Update/Status
Objective 2: Produce Annual Report	Goal achievements will be summarized and included in the Annual Report of Spectrum Utilization. This information will be provided to the Department of Administration Director and CIO for use in technology decisions and strategic planning.		Annually - In January of each year, beginning in 2014.	
	<p>The report will include:</p> <ul style="list-style-type: none"> • A summary of the total FCC licensed spectrum held by the State of Montana. • A review of significant changes to spectrum control from the previous year. • The report will include identification of changes in LMR use. • A status update on VHF frequency availability. • Highlighted spectrum issues impacting Montana public safety agencies. • A status update on proposed technology and its impact on Montana public safety operations. • A list of proposed changes to the LMR Public Safety Spectrum Utilization Planning document. • A summary of proposed changes to policies and procedures. • Recommendations for improved use and management of spectrum, consolidation of operations, and other technical/administrative changes. • Recommendations for changes to MCA 2-17-543 et seq. 			